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ABSTRACT

This document, which is intended as a guide for workforce preparation program providers, details the Illinois occupational skill standards for programs preparing students for employment in occupations in the (vehicle) collision repair technician cluster. It begins with a brief overview of the Illinois perspective on occupational skill standards and credentialing, the process used to develop the skill standards, assumptions underlying the standards, and performance skill levels. Presented next are skill standards for 46 tasks typically performed in the following areas of collision repair: structural analysis and damage repair; nonstructural analysis and damage repair; mechanical and electrical components; plastics and adhesives; painting and refinishing; and estimating. Each skill standard statement contains the following components: (1) the actual skill standard (including the conditions of performance, work to be performed, and performance criteria); (2) performance elements; and (3) performance assessment criteria. The following items are attached and appended: a matrix cross-referencing Automotive Service Excellence Tasks and the Inter-Industry Council on Auto Collision Repair Uniform Procedures for Collision Repair with related Illinois state standards; a collision repair glossary; a glossary of education-related terms; lists of Illinois Occupational Skill Standards and Credentialing Council, Transportation, Distribution and Logistics Subcouncil, and Collision Repair Technician Cluster Standards Development Committee members; and a list of necessary workplace skills. (MN)

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ILLINOIS

OCCUPATIONAL SKILL STANDARDS

COLLISION REPAIR TECHNICIAN CLUSTER

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ILLINOIS OCCUPATIONAL SKILL STANDARDS
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ILLINOIS OCCUPATIONAL SKILL STANDARDS

COLLISION REPAIR TECHNICIAN CLUSTER

Endorsed for Illinois
by the
Illinois Occupational Skill Standards
and Credentialing Council

A MESSAGE FROM THE ILLINOIS OCCUPATIONAL SKILL STANDARDS AND CREDENTIALING COUNCIL

Preparing youth and adults to enter the workforce and to be able to contribute to society throughout their lives is critical to the economy of Illinois. Public and private interest in establishing national and state systems of industry-driven skill standards and credentials is growing in the United States, especially for occupations that require less than a four-year college degree. This interest stems from the understanding that the United States will increasingly compete internationally and the need to increase the skills and productivity of the front-line workforce. The major purpose of skill standards is to promote education and training investment and ensure that this education and training enables students and workers to meet industry standards that are benchmarked to our major international competitors.

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) has been working with industry subcouncils, the Illinois State Board of Education and other partnering agencies to adopt, adapt and/or develop skill standards for high-demand occupations. Skill standards products are being developed for a myriad of industries, occupational clusters and occupations. This document represents the collaborative effort of the Transportation, Distribution and Logistics Subcouncil, and the Collision Repair Technician Cluster Standards Development Committee.

These skill standards will serve as a guide to workforce preparation program providers in defining content for their programs and to employers to establish the skills and standards necessary for job acquisition. These standards will also serve as a mechanism for communication among education, business, industry and labor.

We encourage you to review these standards and share your comments. This effort has involved a great many people from business, industry and labor. Comments regarding their usefulness in curriculum and assessment design, as well as your needs for in-service and technical assistance in their implementation are critical to our efforts to move forward and improve the documents.

Questions concerning this document may be directed to:

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We look forward to your comments.

Sincerely,

The Members of the IOSSCC

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THE ILLINOIS PERSPECTIVE

The Occupational Skill Standards Act (PA 87-1210) established the nine-member Illinois Occupational Skill Standards and Credentialing Council (IOSSCC). Members of the IOSSCC represent business, industry and labor and are appointed by the Governor or State Superintendent of Education. The IOSSCC, working with the Illinois State Board of Education, Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Employment Security and Illinois Department of Commerce and Community Affairs, has created a common vision for workforce development in Illinois.

VISION

It is the vision of the IOSSCC to add value to Illinois' education and workforce development system by developing and supporting the implementation of a statewide system of industry defined and recognized skill standards and credentials for all major skilled occupations that provide strong employment and earnings opportunities.

The IOSSCC endorses occupational skill standards and credentialing systems for occupations that

- require basic workplace skills and technical training,
- provide a large number of jobs with either moderate or high earnings, and
- provide career advancement opportunities to related occupations with moderate or high earnings.

Subcouncils and Standards Development Committees

Under the direction of the IOSSCC, and in cooperation with industry organizations and associations, industry subcouncils have been formed to review, approve and promote occupational skill standards and credentialing systems. The industry subcouncils are: Agriculture and Natural Resources; Applied Science and Engineering;* Business and Administrative Information Services; Communications; Construction;* Education and Training Services;* Energy and Utilities;* Financial Services; Health and Social Services; Hospitality; Legal and Protective Services;* Manufacturing; Marketing and Retail Trade; and Transportation, Distribution and Logistics. (*Indicates subcouncils identified for future development.)

Standards development committees are composed of business, labor and education representatives who are experts in the related occupational cluster. They work with the product developer to

- develop or validate occupational skill standards,
- identify related academic skills,
- develop or review assessment or credentialing approaches, and
- recommend endorsement of the standards and credentialing system to the industry subcouncil.

Expected Benefits

The intent of skill standards and credentialing systems is to promote investment in education and training and ensure that students and workers are trained to meet industry standards that are benchmarked to the state's major international competitors. Skill standards and credentialing systems have major benefits that impact students and workers, employers and educators in Illinois.

Student and Worker Benefits

- Help workers make better decisions about the training they need to advance their careers
- Allow workers to communicate more effectively to employers what they know and can do
- Improve long-term employability by helping workers move more easily among work roles
- Enable workers to help their children make effective academic and career and technical decisions

Employer Benefits

- Focus the investment in training and reduce training costs
- Boost quality and productivity and create a more flexible workforce
- Improve employee retention
- Improve supplier performance
- Enlarge the pool of skilled workers

Educator Benefits

- Keep abreast of a rapidly changing workplace
- Contribute to curriculum and program development
- Provide students with better career advice
- Strengthen the relationship between schools and local businesses
- Communicate with parents because educators have up-to-date information about industry needs

The IOSSCC is currently working with the Illinois State Board of Education and other state agencies to integrate the occupational standards with the Illinois Learning Standards which describe what students should know and be able to do as a result of their education. The IOSSCC is also working to integrate workplace skills—problem solving, critical thinking, teamwork, etc.—with both the Illinois Learning Standards and the Illinois Occupational Skill Standards.

IOSSCC Requirements for Occupational Skill Standards

Illinois Occupational Skill Standards define what an individual should know and the expected level of performance required in an occupational setting. They focus on the most critical work performances for an occupation or occupational area.

Any occupational skill standards and credentialing system seeking IOSSCC endorsement must

- represent an occupation or occupational cluster that meets the criteria for IOSSCC endorsement, including economic development, earnings potential and job outlook;
- address both content and performance standards for critical work functions and activities for an occupation or occupational area;
- ensure formal validation and endorsement by a representative group of employers and workers within an industry;
- provide for review, modification and revalidation by an industry group a minimum of once every five years;
- award credentials based on assessment approaches that are supported and endorsed by the industry and consistent with nationally recognized guidelines for validity and reliability;
- provide widespread access and information to the general public in Illinois; and
- include marketing and promotion by the industry in cooperation with the partner state agencies.

Occupations that do not meet the earnings criteria for IOSSCC endorsement, but are part of an occupational cluster that is being developed, may be presented for recognition by the IOSSCC. IOSSCC members encourage individuals to pursue occupational opportunities identified as endorsed occupations. Examples of occupations that do not meet the endorsement criteria, but have been recognized by the IOSSCC are Certified Nurse Assistant and Physical Therapy Aide.

Skill Standards Components

Illinois Occupational Skill Standards must contain these areas:

- Performance Area
- Performance Skill
- Skill Standard
- Performance Elements
- Performance Assessment Criteria

The Council further identified three components of the Skill Standard (*Conditions of Performance, Work to be Performed and Performance Criteria*) as critical work functions for an occupation or industry/occupational area. The sample format for Illinois Occupational Skill Standards on the following page provides a description of each component of a skill standard.

The sample format also illustrates the coding at the top of each page identifying the state, fiscal year in which standards were endorsed, Subcouncil abbreviation, cluster abbreviation and standard number. For example, the twenty-fifth skill standard in the Collision Repair Technician Cluster, which has been developed by the Transportation, Distribution and Logistics Subcouncil, would carry the following coding: IL.02.TRANS.CRT.25.

SUMMARY OF WORK TO BE PERFORMED. SUMMARY IS BRIEF AND BEGINS WITH AN ACTION VERB.

IL.FY.SUBCOUNCIL. CLUSTER. STANDARD NO.

PERFORMANCE AREA

SKILL STANDARD

CONDITIONS OF PERFORMANCE

A comprehensive listing of the information, tools, equipment and other resources provided to the person(s) performing the work.

WORK TO BE PERFORMED

An overview of the work to be performed in demonstrating the performance skill standard. This overview should address the major components of the performance. The detailed elements or steps of the performance are listed under "Performance Elements."

PERFORMANCE CRITERIA

The assessment criteria used to evaluate whether the performance meets the standard. Performance criteria specify product/outcome characteristics (e.g., accuracy levels, appearance, results, etc.) and process or procedure requirements (e.g., safety requirements, time requirements, etc.).

PERFORMANCE ELEMENTS

Description of the major elements or steps of the overall performance and any special assessment criteria associated with each element.

PERFORMANCE ASSESSMENT CRITERIA

Listing of required testing, certification and/or licensing.

Product and process used to evaluate the performance of the standard.

PRODUCT

Description of the product resulting from the performance of the skill standard.

PROCESS

Listing of steps from the Performance Elements which must be performed or the required order or performance for meeting the standard.

OCCUPATIONAL EARNINGS AND EMPLOYMENT INFORMATION FOR COLLISION REPAIR TECHNICIAN CLUSTER SKILL STANDARDS

I. Developmental Process and Occupational Definition

A. Developmental Process

After reviewing the current labor market information, the Transportation, Distribution and Logistics Subcouncil recommended the development of skill standards for Collision Repair Technician. The identified career, collision repair technician, meets the criteria established by the Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) for performance skill standard development, education and training requirements, employment opportunities, earnings potential and career opportunities. A product developer knowledgeable about collision repair began the process of performance skill identification. The product developer prepared an outline and framework designed to address the major skills expected in the workplace. The framework addresses skill requirements common to collision repair.

The subcouncil recommended the final skill standards product be presented to the IOSSCC. The IOSSCC reviewed the skill standards and met with the product developer, state liaison and chair of the subcouncil. Based on the review, the IOSSCC voted to endorse the collision repair skill standards.

1. Resources

Job descriptions, credentialing standards from professional organizations and competencies addressed in related educational programs were solicited and received. The Inter-Industry Conference on Auto Collision Repair (I-CAR) Education Foundation and the National Automotive Technicians Education Foundation (NATEF) were consulted. Common and accepted references provided reinforcement for the direction given in the framework. Those references included current texts used by educational institutions and organizations such as the Collision Industry Conference.

2. Standards Development Committee

A standards development committee (SDC) composed of educators and collision repair technicians was convened. The framework, initial outline, matrix and draft skill standards were presented to the SDC for review, revision, adjustment and validation. Additional skill standard statements with performance elements and assessment criteria were developed in accordance with the direction established by the IOSSCC and were presented to the SDC for review and revision. Educators joined the SDC at a final meeting to review the skill standards for consistency in terminology and consistency in the assessment criteria.

B. Occupational Definitions

The continuing developments of new designs for vehicles in the automobile industry have increased the need for qualified, highly trained collision repair technicians. These skills describe the standards appropriate for repair and refinish technicians as well as estimators in the collision repair industry.

1. **Master Body Technician** repairs or replaces sheet metal, glass, plastic and fiberglass parts on the automobile. It is essential for the master body technician to have a working knowledge of vehicle construction, the proper use of hand tools, pneumatic tools and welding equipment and application and finishing techniques of fillers. Tasks that may be included are repairing and straightening of structures using dimensioning and pulling equipment. It is also important to have a working knowledge of all mechanical and electrical component skills.

2. **Estimator** prepares written and/or computer-generated appraisals on collision repair work. Knowledge of how vehicles are constructed and the ability to identify paint problems is necessary. This individual determines parts, materials and labor required to repair the vehicle and computes the cost of the repair. Consequently, it is critical for the estimator to have an understanding of labor and parts time guides as well as a practical interpretation of time needed to perform skills. Other necessary skills include claim file management and communication with vehicle owners and insurers. Utilization of electronic transfer of information is essential for an estimator.

3. **Nonstructural Body Technician** repairs or replaces sheet metal, glass, plastic and fiberglass parts on the automobile. It is essential for the nonstructural body technician to have an understanding of vehicle construction, the proper use of hand tools, pneumatic tools and welding equipment and application and finishing techniques of fillers. It is important for this individual to have a working knowledge of wheel and tire, lighting systems, accessories and active/passive restraint systems diagnosis and repair.

4. **Paint Technician** prepares or supervises preparation of surfaces to be painted and mixes and applies paint. This position requires thorough knowledge of refinishing products and procedures as well as skills concerning color matching and the operation of spray guns, buffers and polishers. In addition, the paint technician can perform plastic repairs and application of decals, tape stripes, emblems and moldings.

5. **Collision Mechanical Technician** repairs or replaces mechanical parts of the vehicle such as the engine, suspension and steering components, driveline and electrical components.

6. **Detailer** will have a combination of duties which may include cleaning and inspection of the vehicle exterior and interior (e.g., upholstery, vinyl surfaces, glass), buffing and polishing of finishes, cleaning the engine compartment and applying decals, tape stripes, emblems and moldings.

II. Employment and Earnings Opportunities

A. Education and Training Requirements

Formal training, apprenticeship or on-the-job training is required by employers of collision repair technicians. Minimum qualifications of apprenticeship applicants are: completion of the tenth grade and an aptitude test, physical ability to perform the work and a definite interest in the work. Interest in the work is shown by previous training, jobs, military service or hobbies.

Training is also available through associate degree, one-year and short-term certificate community college programs, vocational schools and some high schools. There are some high school collision repair programs that allow students to attend college courses and receive credit at the high school as well as the college. Employers prefer applicants with a combination of formal training and experience.

Admission requirements and prerequisites vary from institution to institution but generally include a high school diploma or GED, a minimum age of 18 and high school courses in mathematics, chemistry, biology and English. The community college programs offer either a certificate of completion or associates degree for completed course work.

Collision repair training facilities should be National Institute for Automotive Service Excellence (ASE) certified to the NATEF standards. The areas covered may include welding, structural repair, nonstructural repair, mechanical and electrical repair, plastics repair, painting and refinishing and estimating. After obtaining an education, it is recommended that the student take ASE tests for these specific areas. These tests are given at various regional locations throughout the state.

Another source of training is I-CAR courses. These classes are offered throughout the state based on the demand for training and are generally offered at night or on Saturdays. The courses generally cover all aspects of the collision repair industry except estimating. Currently, the traditional courses are considered continuing education and do not require an exam. These courses will eventually be phased out and replaced with enhanced courses for which an exam is required.
A certificate is issued upon completion of the requirements for the courses.
Community colleges and vocational schools offer a certificate of completion once the program in a particular field of study is accomplished.

Technicians who handle refrigerant are required to have Environmental Protection Agency (EPA) Refrigerant Handling Certification.

B. Employment Opportunities

Employment of collision repair technicians is projected to increase about as fast as the average for all occupations through 2008. The outlook depends on the number of damaged automobiles and the replacement of workers who leave the trade. The growing population should yield an increase in the number of vehicles in service. This in turn increases the likelihood of more accidents and an increase in the demand for collision repair technicians. Individuals who complete I-CAR and NATEF training should receive the best opportunities. In addition, according to the I-CAR Education Foundation 1998 Collision Repair Industry Survey, technician income is significantly higher for those that have had training within the previous two years compared with those who have had no training.

An individual may begin in the collision repair industry as a helper or an entry-level technician. Some may be promoted to shop supervisors. Others become automobile damage appraisers. Some workers start their own collision repair shops.

C. Earnings Opportunities

	Middle Range* Annual Earnings 2000
Master Body Technician	$28,425 - $49,925
Estimator	$27,440 - $44,945
Nonstructural Body Technician	$23,425 - $39,925
Paint Technician	$23,425 - $39,925
Collision Mechanical Technician	$22,465 - $36,960
Detailer	$22,465 - $36,960

Earnings are based on quality production and proven performance.

**Middle Range is the middle 50%, i.e., one-fourth of persons in the occupation earn below the bottom of the range and one-fourth of persons in the occupation earn above the top of the range.*

Source: *Occupational Employment Statistics: Wage Data,* Illinois Department of Employment Security, Economic Information and Analysis Division.

III. Assessment and Credentialing Systems

The IOSSCC recognizes that industry commitment for third-party assessment is beneficial and requests that each SDC and/or subcouncil identifies the most beneficial method for assessing the standards.

Collision repair technicians are credentialed through organizations such as ASE, I-CAR and others.

IV. Industry Support and Commitment

The primary areas currently identified for industry support and commitment of occupational skill standards are development, updating and marketing. Business and industry partners may identify future uses of occupational skill standards such as credentialing/certification, career development of employees and specifications for out-source training programs.

A. Industry Commitment for Development and Updating

1. The development of skill standards for collision repair technician is the direct result of efforts by the Transportation, Distribution and Logistics Subcouncil and the SDC. Names of the persons serving on the subcouncil and the SDC are located in the appendices.
2. In developing the products, the following steps were completed:
   a. Identification and prioritization of career ladder, identifying jobs by name
   b. Review of resources
   c. Development of draft matrix of performance standards
   d. Development of performance standard that was identified on matrix
   e. Convening of standards development committee of incumbent workers
   f. Review, validation and approval of skill standards by standards development committee
   g. Review and approval of standards by subcouncil
   h. Endorsement of skill standards by IOSSCC

B. Industry Commitment for Marketing

The Transportation, Distribution and Logistics Subcouncil is committed to marketing and obtaining support and endorsement from the leading industry associations impacted by the skill standards. Upon recognition/endorsement of the standards by the IOSSCC, the subcouncil strongly recommends that professional trade groups, academic groups, etc. develop and provide an in-service/seminar package to promote skill standard awareness and to obtain full industry support and commitment for the development of a full industry marketing plan.

The Transportation, Distribution and Logistics Subcouncil encourages the availability of skill standards to the public including learners, parents, workers, educators at all levels, employers and industry personnel.

ASSUMPTIONS FOR COLLISION REPAIR TECHNICIAN CLUSTER SKILL STANDARDS

Skill standards assume that individuals have received education and/or training in a setting such as a secondary, postsecondary and/or apprenticeship/on-the-job training program and have the background knowledge necessary for performing the skill standards contained in this publication. The education and/or training includes instruction for the proper handling and operation of materials, tools and equipment required for performing the skills including the purpose of use, when to use, how to use and any related safety issues.

The instructional/training program must adhere to all local, state and federal licensing and/or certification requirements as set by law, if applicable.

The standards development committee developed these skill standards based on the following assumptions:

1. Workplace skills (employability skills) are expected of the individual. Socialization skills needed for work are related to lifelong career experience and are not solely a part of the initial schooling process. These are not included with this set of statements.
2. Specific policies and procedures of the work site will be made known to the individual and will be followed.
3. Time elements outlined for the skill standards result from the experience and consideration of the panel of experts who made up the standards development committee.
4. Once a skill has been successfully performed, it will be incorporated into more complex skills.
5. Skill standards describe the skill only and do not detail the background knowledge or theory related to the particular skill base. Although the skill standard enumerates steps to successful demonstration, rote approaches to the outcomes are not prescribed.
6. Skills will be completed in an expedient and safe manner.
7. Skill standards are selected because they meet workplace needs and are designed to meet professional standards of practice.
8. Skill standards do not replace, supersede or substitute for procedure manuals.
9. Skill standards do not supersede or take the place of industry certification or graduation from an accredited program of study.
10. Entry level employee knows how to research and use industry reference and training materials.
11. All repair times will be derived from one of the flat rate manuals commonly used in the collision repair industry if applicable.
12. Entry level employee's communication to the supervisor of the repair plan is essential.
13. All repair tasks are to be accomplished in accordance with automobile and product manufacturers' recommended procedures when applicable, and should be performed using the Inter-Industry Conference on Auto Collision Repair (I-CAR) Uniform Procedures for Collision Repair (UPCR). The tasks should also be performed according to The National Institute for Automotive Service Excellence (ASE) standards.

14. All tasks require strict adherence to personal and environmental safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and proper ventilation and disposal in accordance with local, state and federal regulations.

15. The occupations listed in the matrix have independent skill sets; however, their functions are interrelated and each must have a thorough understanding of those relationships (teamwork) in order to function successfully.

16. Employee must be physically capable of performing skills.

PERFORMANCE SKILL LEVELS

	MASTER BODY TECHNICIAN*	ESTIMATOR**	NONSTRUCTURAL BODY TECHNICIAN***	PAINT TECHNICIAN	COLLISION MECHANICAL TECHNICIAN	DETAILER
STRUCTURAL ANALYSIS AND DAMAGE REPAIR						
Perform Welding and Cutting	•		•			
Perform Damage Analysis	•		•		•	
Perform Frame Inspection and Repair	•					
Perform Unibody Inspection, Measurement and Repair	•					
Perform Removal and Installation of Fixed Glass	•		•			
NONSTRUCTURAL ANALYSIS AND DAMAGE REPAIR						
Perform Removal of Interior and Exterior Trim, Molding, Upholstery and Other Miscellaneous Accessory Items and Hardware	•		•		•	
Perform Mechanically Attached Panel Removal, Replacement and Alignment	•		•			
Perform Fixed Panel Replacement	•		•			
Perform Panel Repair	•		•			
Perform Miscellaneous Nonstructural Repair	•		•			
Perform Moveable Glass Inspection and Repair	•		•		•	
MECHANICAL AND ELECTRICAL COMPONENTS						
Perform Front Suspension Diagnosis and Repair	•				•	
Perform Rear Suspension Diagnosis and Repair	•				•	
Perform Steering System Diagnosis and Repair					•	
Perform Wheel Alignment Diagnosis, Adjustment and Repair					•	
Perform Wheel and Tire Diagnosis and Repair					•	
Perform General Electrical System Diagnosis and Repair					•	
Perform Battery and Charging System Diagnosis and Service					•	
Perform Lighting System Diagnosis and Repair					•	
Perform Horn and Wiper/Washer Diagnosis and Repair					•	
Perform Accessories Diagnosis and Repair					•	
Perform Brake Hydraulic system Diagnosis and Repair					•	
Perform Drum and Disc Brake Diagnosis Replacement and Repair					•	
Perform Antilock Brake System (ABS) Service					•	
Perform Air Conditioning Service and Repair					•	
Perform Heating, Ventilation and A/C Common Component Inspection and Repair					•	
Perform Inspection and Repair of Engine Cooling Systems					•	
Perform Drive Train Inspection, Removal and Installation					•	
Perform Fuel and Exhaust Inspection, Removal and Inspection					•	
Perform Active and Passive Restraint Systems Diagnosis and Repair					•	
Perform Supplemental Restraint Systems (SRS) Diagnosis and Repair					•	

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PERFORMANCE SKILL LEVELS

	MASTER BODY TECHNICIAN*	ESTIMATOR**	NONSTRUCTURAL BODY TECHNICIAN***	PAINT TECHNICIAN	COLLISION MECHANICAL TECHNICIAN	DETAILER
PLASTICS AND ADHESIVES						
Perform Identification and Repair of Plastics	•		•	•		
Perform Sheet Molded Compound Repairs	•		•	•		
Perform Bonded Sheet Molded Compound Panel Replacement	•		•			
PAINTING AND REFINISHING						
Prepare Surface for Refinishing				•		
Perform Preparation of Equipment and Refinish Materials				•		
Perform Application of Finish				•		
Perform Application of Specialized Paint Schemes and Products				•		
Identify and Solve Paint Problems				•		
Perform Buffing and Polishing of Finish				•		•
Perform Removal and Application of Decals, Tape Stripes, Emblems and Moldings	•		•	•		•
Perform Post Repair Interior and Exterior Cleanup				•		•
ESTIMATING						
Create Computerized Damage Report		•				
Identify Damage		•				
Perform Computer Estimating Related Tasks		•				
Handle Claims Process		•				

***Master Body Technician** must have a thorough understanding and knowledge of steering system, wheel alignment, wheel and tire, general electrical system, battery and charging system, lighting system, horn and wiper/washer, accessories, hydraulic system, drum and disc brakes and supplemental restraint system diagnosis and repair/replacement/adjustment. This individual must also know and understand antilock brake system, air conditioning, HVAC common components, engine cooling systems, drive train, fuel and exhaust inspection and service. The master body technician must be able to remove and reinstall mechanical components.

****Estimator** must be able to identify paint problems. This individual must also have a thorough understanding and knowledge of the repair process.

*****Nonstructural Body Technician** must have a thorough understanding and knowledge of structural analysis and damage repair along with wheel and tire, lighting system, accessories and active/passive restraint systems diagnosis and repair.

The occupations listed in the Performance Skill Levels have independent skill sets; however, their functions are interrelated and each must have a thorough understanding of those relationships (teamwork) in order to function successfully.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform welding and cutting on specific metals.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies depending on type of weld, type of metal, etc.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage, and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check automobile manufacturer's information or I-CAR UPCR regarding the welding process and equipment recommended. (WE01A, WE01S, WE11A, WE11S, WE21A, WE21S, WE51S)
5. Secure the appropriate tools and materials to prepare for the welding or cutting process.

6. Identify the type of material (e.g., steel, aluminum) to be cut or welded. Extreme caution should be taken in this step to identify magnesium parts. (ID1, HP-I; IIE1, HP-I)
7. Prepare the metal to be welded; metal should be cleaned, fitted and protected against corrosion. (ID11, HP-I; IIE11, HP-I)
8. Determine the piece of equipment best suited to perform the welding or cutting task. (ID3, HP-I; IIE3, HP-I)
9. Perform setup and adjustments for the equipment being used.
   a. Mig welder. Include the following: ground connection, heat range, wire speed, gas type and flow, polarity and wire type. (ID3, HP-I; IIE3, HP-I)
   b. Resistance type welder. Check the following: pressure settings, current adjustment, timer and type of electrode. (IIE15, HP-G)
10. Provide protection for surrounding panels, glass and interior. (ID9, HP-G; IIE9, HP-G)
11. Provide protection for computers and electronic components. (ID10, HP-G; IIE10, HP-G)
12. Perform welding using appropriate butt joint, t-joint or lap joint; use recommended procedure for type of weld: continuous, plug, stitch, spot, lap spot or tack. (ID12, HP-I; ID13, HP-I; ID14, HP-I; IIE12, HP-I; IIE13, HP-I; IIE14, HP-I)
13. Troubleshoot welding-related problems; determine necessary action. (ID16, HP-I; ID17, HP-I; IIE17, HP-I; IIE18, HP-I)
14. Determine the cutting process best suited for different materials and locations. (Use automobile manufacturer's recommendations.) (ID18, HP-G; IIE19, HP-G)
   a. Set up an oxyacetylene torch to include: oxygen and acetylene regulator adjustment, flame adjustment and tip selection.
   b. Set up a plasma cutter to include: ground connection, air supply, current settings and cutting nozzle.
15. Clean up work area.
16. Return tools to proper location.
17. Complete proper documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Welding and cutting procedures are performed.

PROCESS

All performance elements for performing welding and cutting are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on automobile manufacturer and industry recommendations.

8. Attach measuring system to the vehicle.
9. Measure the damage and compare to factory specifications. (IB2, HP-I; IB4, HP-G; IB5, HP-G; IB6, HP-I)
10. Determine the primary and secondary damage to structural and nonstructural components. (IB6, HP-I; IIB1, HP-I)
11. Develop a repair plan. (IIA1, HP-G)
12. Clean up work area.
13. Return tools to proper location.
14. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Analysis of the structural damage is performed and documented.

PROCESS

All performance elements for performing damage analysis are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the extent of the damage.

PERFORM FRAME INSPECTION AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform frame inspection and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the appropriate equipment, automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with the extent of damage to the vehicle.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage, and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Prepare the vehicle for inspection and repair.
5. Secure appropriate tools and equipment to complete the procedure.
6. Obtain automobile manufacturer's dimensions and identify approved procedures. (ME01)
7. Inspect structural components, as well as steering and suspension, and power train components for damage and misalignment. (IA11, HP-I)

8. Install measuring systems, determine areas out of specifications and document. (IA1, HP-I)
9. Attach anchoring devices and pulling equipment. (IA2, HP-I)
10. Determine type of damage (e.g., collapse, sag, twist or diamond); straighten damage using approved methods. (IA3, HP-G; IA4, HP-G; IA5, HP-G; IA6, HP-G; IA7, HP-G)
11. Inspect, remove and replace damaged frame members and components. (IA8, HP-G; ST01A, ST01S, ST11, SP11A, SP11S)
12. Restore corrosion protection. (IA9, HP-G; CP01A, CP01S)
13. Clean up work area.
14. Return tools to proper location.
15. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

It is necessary to have an understanding of all components connected to the frame in order to make an effective repair.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Frame inspection and repair are performed and documented.

PROCESS

All performance elements for performing frame inspection and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type of frame damage.

7. Inspect structural components, as well as steering and suspension, and power train components for damage and misalignment. (IB1, HP-G)
8. Install measuring systems and determine areas out of specifications. (IB2, HP-I)
9. Determine the extent of the direct and indirect damage and the direction of impact; determine the methods and sequence of repair. (IB6, HP-I)
10. Attach the anchoring devices. (IB7, HP-I)
11. Straighten and align structural components according to automobile manufacturer's procedures and specifications.
    a. Apply proper heat stress relief to high strength steel. (IB14, HP-G; ST01A, ST01S)
    b. Apply proper cold stress relief methods. (IB15, HP-G; ST11)
12. Straighten and align suspension and powertrain mounting points. (IB13, HP-G)
13. Remove and replace structural sections and body panels. (IB18, HP-G)
14. Inspect for folds, curves, creases and dents; restore to original contour. (IB16, HP-I)
15. Restore corrosion protection. (IB19, HP-G; CP01A, CP01S)
16. Clean up work area.
17. Return tools to proper location.
18. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Unibody inspection, measurement and repair are performed.

PROCESS

All performance elements for performing unibody inspection, measurement and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type of frame damage.

8. Remove and replace fixed glass (heated and nonheated); use automobile manufacturer's recommendations. (IC1, HP-G)
9. Remove and replace modular glass; use automobile manufacturer's recommendations. (IC2, HP-G)
10. Clean up work area.
11. Return tools to proper location.
12. Complete appropriate documentation.
13. Re-verify the integrity of the repair (e.g., water, wind, noise).

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Removal and installation of fixed glass is performed.

PROCESS

All performance elements for performing removal and installation of fixed glass are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks used depend on the type of glass and the method in which the glass is held in place.

5. Determine sequence of disassembly and reassembly.
6. Develop and document a repair plan.
7. Remove and store components.
8. Determine necessary fastener, molding replacement parts and accessory items (e.g., wide adhesive moldings, molding retainers, exterior hardware, door handles) and document.
9. Remove (replace if necessary) interior trim, upholstery and related items. **Knowledge of the methods used to fasten the components and access to specialty tools needed to perform the tasks is critical. (Performance may require Skill 31.)** (IIA3, HP-G)
   a. Door trim panel.
   b. Garnish molding.
   c. Seats.
   d. Seat belt components and carpeting.
   e. Dash assembly.
10. Remove and replace exterior trim, molding and accessories. (IIA2, HP-G)
    a. Adhesive-held molding and trim.
    b. Belt molding and trim.
    c. Reveal molding and trim.
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Removal of interior and exterior trim, molding, upholstery and other miscellaneous accessory items and hardware is performed.

PROCESS

All performance elements for performing removal of interior and exterior trim, molding, upholstery and other miscellaneous accessory items and hardware are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the need to complete a particular task.

6. Prepare used panel for installation (based on estimate).
   a. Clean and inspect used panel.
   b. Remove all trim and hardware. (TH01)
   c. Repair as necessary. (See Skill 9.)
7. Prepare the vehicle for panel replacement.
8. Determine the extent of damage including identifying need for replacement of one time use molding.
9. Develop and document a repair plan. (IIB1, HP-I)
10. Secure appropriate tools, equipment and components required to complete the procedure.
11. Protect panels and parts adjacent to the repair area.
12. Remove necessary trim and molding as per repair plan.
13. Remove vehicle mechanical and electrical components that may be damaged or interfere with the repair.
14. Remove damaged panel and inspect panel mounting surfaces and related hardware; determine necessary action for repair. (IIB2, HP-I)
15. Replace and align hoods, deck lids, doors, tailgates, hatches and fenders according to facility's policy and procedures.
16. Reinstall hardware and trim (after refinishing and polishing).
17. Clean up work area.
18. Return tools to proper location.
19. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Mechanically attached panel removal, replacement and alignment is performed.

PROCESS

All performance elements for performing mechanically attached panel removal, replacement and alignment are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

PERFORM FIXED PANEL REPLACEMENT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform fixed panel replacement.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 1.50.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage, and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check automobile manufacturer and I-CAR UPCR. (QT01A, QT01P, QT01S, QT11A, QT11S, RB01A, RB01S, RO01S, RO02S, RO11, SP71A, SP71S, SP91A, SP91S)
5. Prepare the vehicle for repair.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Determine the extent of damage; develop a repair plan. (IIB1, HP-I)
8. Prepare the damaged area for repair.
   a. Remove and replace damaged trim and molding.
   b. Remove and replace vehicle mechanical and electrical components that may be damaged or interfere with the repair.
   c. Protect panels and parts adjacent to the repair area. (IIA6, HP-I)
   d. Remove corrosion protection, undercoating and sealers necessary to perform repairs. (IIA8, HP-I)
9. Determine location of factory welds and remove for full panel replacement. (IIB12, HP-I)
10. Determine manufacturer's recommended locations for sectioning; perform removal. (IIB12, HP-I)
11. Prepare new panel for installation.
    a. Inspect and repair handling damage.
    b. Prepare metal for welding. (IIE11, HP-I)
    c. Apply corrosion protection. (IIB11, HP-I)
12. Repair damaged joining surfaces. (ST21A, ST21S)
13. Fit and weld panel; use appropriate welding techniques. (IIE11, HP-I)
14. Apply original equipment manufacturer (OEM) sealers, corrosion protection and undercoating. (IIB15, HP-I; CP01A, CP01S, ST31)
15. Clean up work area.
16. Return tools to proper location.
17. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-Car UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Fixed panel replacement is performed.

PROCESS

All performance elements for performing fixed panel replacement are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

8. Prepare the damaged area for repair. (IIB1, HP-I)
   a. Remove and replace damaged trim and molding.
   b. Remove and replace vehicle mechanical and electrical components that may be damaged or interfere with the repair.
   c. Protect panels and parts adjacent to the repair area.
   d. Remove paint from damaged area. (IIC1, HP-1)
   e. Straighten panel using appropriate technique (hammer and dolly, cold shrink, and heat shrink). (IIC3, HP-I; IIC4, HP-G; IIC5, HP-G; ST21A, ST21S)
   f. Mix and apply body filler. (IIC7, HP-I; ST31)
   g. Sand filler to contour. (IIC8, HP-I)
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Panel repair is performed.

PROCESS

All performance elements for performing panel repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

PERFORM MISCELLANEOUS NONSTRUCTURAL REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform miscellaneous nonstructural repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 1.50.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check automobile manufacturer's recommended procedures.
5. Prepare the vehicle for repair.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Perform door skin replacement. (IIB13, HP-G; DO31A, DO31S, DO31P)
   a. Remove door and all internal and external components.
   b. Determine method (welded or bonded) of door skin attachment.
   c. Remove skin using automobile manufacturer's procedures.
   d. Inspect and replace damaged internal components.
   e. Install door skin using approved methods (welding or bonding).
8. Restore sealers, mastic, sound deadeners and foam fillers. (IIB15, HP-G)
9. Diagnose and repair water leaks, dust leaks and wind noise. (IIB17, HP-G)
10. Clean up work area.
11. Return tools to proper location.
12. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Miscellaneous nonstructural repairs are performed.

PROCESS

All performance elements for performing miscellaneous nonstructural repairs are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

8. Repair or replace power accessories and related controls. (IID1, HP-G)
9. Inspect, repair or replace and adjust sunroofs, related hardware and controls. (IID3, HP-G; MG31)
10. Remove, reinstall and align convertible tops. (IID4, HP-G; MG51)
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Moveable glass inspection and repair are performed.

PROCESS

All performance elements for performing moveable glass inspection and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

8. Inspect, remove and replace damaged front suspension compo[illegible]
   a. Identify short and long arm suspension system damaged compo[illegible]s. (SU11)
   b. Examine control arm/radius arm mounting area or cradle. Perform necessary action.
   c. Identify MacPherson strut/shock absorbers suspension system damaged components.
   d. Remove, inspect and install upper and lower control arms, bushings, shafts/drive axles and rebound bumpers. (IIIA14, HP-G; DT21, DT31)
   e. Install differential assembly. (Differential overhaul requires Skill 28.)
   f. Remove and replace upper ball joints and/or control arms on short and long arm suspension systems. (IIIA16, HP-G)
   g. Remove and replace steering knuckle assemblies. (IIIA17, HP-G)
   h. Remove, inspect and replace front wheel bearings.
   i. Remove and install short and long arm suspension system coil springs and spring insulators. (IIIA18, HP-G)
   j. Examine, replace and adjust front suspension system torsion bars and inspect mounts. (IIIA19, HP-G)
   k. Remove, inspect and install stabilizer bar bushings, brackets and links. (IIIA20, HP-G)
   l. Remove, inspect and install MacPherson strut cartridge or assembly, strut coil spring, insulators (silencers) and upper strut bearing mount. (IIIA18, HP-G; IIIA21, HP-G; SU01)
   m. Examine and replace air supported suspension components. (IIIA26, HP-G; SU51)
   n. Validate proper operation of electronic components (e.g., ABS and traction control) related to suspension and brake systems (after completing Skill 15). (IIIA27, HP-G)
9. Lubricate suspension system.
10. Clean up work area.
11. Return tools to proper location.
12. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Front suspension diagnosis and repair are performed.

PROCESS

All performance elements for performing front suspension diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being repaired and nature of the damage.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform diagnosis and repair of rear suspensions.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Inspect suspension component mounting areas and measure if necessary. (See Skill 4.)

8. Inspect, remove and replace damaged rear suspension components.
   a. Remove and replace knuckle assemblies.
   b. Remove, inspect and replace rear wheel bearings.
   c. Remove, inspect and install coil springs and spring insulators. (SU31)
   d. Remove, inspect and install transverse links, control arms, trailing arms/straight axle assembly, bushings and mounts. (Differential overhaul requires performance of Skill 28.) (IIIA22, HP-G)
   e. Remove, inspect and install leaf springs, leaf spring insulators, shackles, brackets, bushings and mounts. (IIIA23, HP-G; SU41)
   f. Remove, inspect and install MacPherson strut cartridge/shock absorbers or assembly, strut coil spring and insulators. (IIIA25, HP-G; SU01)
   g. Inspect and replace air supported suspension components. (IIIA26, HP-G; SU51)
9. Perform Skill 15.
10. Validate proper operation of electronic components (e.g., ABS and traction control) related to suspension and brake systems. (IIIA27, HP-G)
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Rear suspension diagnosis and repair are performed.

PROCESS

All performance elements for performing rear suspension diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being repaired and nature of the damage.

PERFORM STEERING SYSTEM DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform steering system diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Diagnose, inspect and replace steering wheel. Automobile manufacturer's procedures must be observed when replacing supplemental restraint systems.

8. Diagnose and inspect steering column and steering gear damage.
   a. Diagnose steering column damage, looseness and binding concerns (including tilt mechanisms), collapsible column and lock cylinder mechanism and determine necessary action. (IIIA30, HP-G; SR21)
   b. Diagnose power steering gear (non rack and pinion) binding, uneven turning effort, looseness, hard steering, fluid leakage concerns, mounting area and hardware. Determine necessary action. (IIIA32, HP-G)
   c. Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, fluid leakage concerns, mounting area and hardware. Determine necessary action. (IIIA33, HP-G)
   d. Inspect steering shaft universal joint(s) and flexible coupling(s) and perform necessary action. (IIIA31, HP-G)
9. Remove, service, adjust and reinstall steering gear. (SR01, SR11, SR41, SR51)
   a. Remove and replace manual or power rack and pinion steering gear/steering box; inspect mounting bushings and brackets. (IIIA6, HP-G; IIIA7, HP-G)
   b. Adjust manual or power rack and pinion steering gear/steering box.
   c. Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. (IIIA2, HP-G)
10. Repair power steering system.
   a. Inspect power steering fluid levels and condition.
   b. Diagnose power steering fluid leakage; determine necessary action.
   c. Remove, inspect, replace and adjust power steering pump belt. (IIIA3, HP-G)
   d. Remove, inspect and replace power steering pump, mounts, seals and gaskets (IIIA4, HP-G)
   e. Inspect and replace power steering hoses and fittings. (IIIA5, HP-G)
   f. Flush, fill and bleed power steering system.
11. Inspect and replace steering linkage components.
   a. Examine and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings and steering linkage damper. (IIIA9, HP-G; IIIA10, HP-G; IIIA11, HP-G; IIIA13, HP-G)
   b. Examine, replace and adjust tie rod ends (sockets), tie rod sleeves and clamps. (IIIA12, HP-G)
12. Diagnose and adjust components of electronically controlled steering systems; determine necessary action. (IIIA27, HP-G)
13. Clean up work area.
14. Return tools to proper location.
15. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Steering system diagnosis and repair are performed.

PROCESS

All performance elements for performing steering system diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being repaired and nature of the damage.

PERFORM WHEEL ALIGNMENT DIAGNOSIS, ADJUSTMENT AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform wheel alignment diagnosis, adjustment and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies depending on necessary operations. For operations included in the model specific, published, flat rate time guides, skill is completed within rate multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure and specifications.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Diagnose steering and handling complaints with appropriate load.
   a. Check for worn parts or damage and replace if necessary. (See Skill 14.)
   b. Verify tire pressure, condition and uniformity of size in accordance with automobile manufacturer's specifications and procedures.
   c. Test drive vehicle for wander, drift, pull, hard steering, bump steer, memory steer, torque steer and steering return concerns; determine necessary action. (IIIA36, HP-G)
   d. Perform prealignment inspection; perform necessary action.
   e. Check front cradle (subframe) alignment.
   f. Measure vehicle riding height; determine necessary action. (IIIA28, HP-I)
8. Inspect and adjust rear alignment angles with appropriate load. (WA11)
   a. Check rear cradle (subframe) alignment; replace or repair.
   b. Check and adjust rear wheel camber on adjustable and non-adjustable suspension systems. (IIIA37, HP-I; IIIA38, HP-I)
   c. Check rear wheel thrust angle; determine needed repairs. (IIIA45, HP-I)
   d. Check and adjust rear wheel toe. (IIIA41, HP-I)
9. Inspect and adjust front alignment angles with appropriate load. (WA01)
   a. Check front cradle (subframe) alignment; replace or repair. (IIIA29, HP-G)
   b. Check and adjust front wheel camber; perform necessary action. (IIIA37, HP-I; IIIA38, HP-I)
   c. Check and adjust caster; determine needed repairs.
   d. Check toe-out-on-turns (turning radius); determine needed repairs. (IIIA43, HP-I)
   e. Check SAI (steering axis inclination) and included angle; determine needed repairs. (IIIA44, HP-I)
   f. Check for front wheel setback; determine necessary action. (IIIA46, HP-I)
   g. Center steering wheel. (IIIA42, HP-I)
   h. Check and adjust front wheel toe. (IIIA41, HP-I)
10. Test drive vehicle to verify drivability. Readjust within tolerance if necessary.
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Wheel alignment diagnosis, adjustment and repair are performed.

PROCESS

All performance elements for performing wheel alignment diagnosis, adjustment and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform wheel and tire diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies depending on necessary operations. For operations included in the model specific, published, flat rate time guides, skill is completed within rate multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (WH01S)
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Perform tire wear diagnosis and routine service.
   a. Diagnose tire wear patterns; determine necessary action. (IIIA47, HP-I)
   b. Inspect tires; check and adjust air pressure. (IIIA48, HP-I)
   c. Diagnose wheel/tire vibration, shimmy and noise; determine necessary action. (Other skill set [e.g., brake service] may be required.) (IIIA49, HP-G)
8. Check tires and wheels for causes of abnormal handling.
   a. Measure wheel, tire, axle and hub runout; determine needed repairs. (IIIA50, HP-I)
   b. Diagnose tire pull (lead) problem; determine needed repairs. (IIIA51, HP-G)
9. Check tire for balance and out of round.
   a. Remove and replace if necessary.
   b. Torque lug nuts. (IIIA52, HP-I)
10. Verify repairs by test driving.
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Wheel and tire diagnosis and repair are performed.

PROCESS

All performance elements for performing wheel and tire diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM GENERAL ELECTRICAL SYSTEM DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform general electrical system diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies depending on degree of damage to electrical system.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Diagnose electrical system problems. (EL01, EL11, EL21)
   a. Check battery and connections.
   b. Check electrical wiring circuits for voltage with a digital multimeter; determine needed repairs. (IIIB1, HP-I)
   c. Check current flow in electrical circuits using an ammeter; determine needed repairs.
   d. Check continuity and resistances in electrical circuits and components; determine necessary action. (IIIB2, HP-I)
   e. Check electrical wiring and connectors; repair according to automobile manufacturer's specifications. (IIIB3, HP-I)
   f. Inspect, test and replace fusible links, circuit breakers and fuses; determine necessary action. (IIIB4, HP-I)
   g. Locate shorts, grounds, opens and resistance problems in electrical circuits; determine needed repair.
8. Repair electrical circuits.
   a. Perform wiring harnesses and connectors repair according to manufacturer's specifications.
   b. Perform solder repair of electrical wiring and apply appropriate insulation.
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

General electrical system diagnosis and repair is performed.

PROCESS

All performance elements for performing general electrical system diagnosis and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM BATTERY AND CHARGING SYSTEM DIAGNOSIS AND SERVICE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform battery and charging system diagnosis and service.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with the complexity of the repair.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemical in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Perform battery state-of-charge test; determine needed service. (IIIB5, HP-I)

8. Identify programmable electrical/electronic components; record data for reprogramming or install supplemental power device before disconnecting battery. (IIIB9, HP-G)
9. Service and charge the battery.
   a. Inspect, clean (neutralize acid leaks) and replace battery. (IIIB6, HP-I)
   b. Perform slow/fast battery charge. (IIIB8, HP-I)
   c. Inspect and clean battery cables, connectors, clamps and hold-downs; repair or replace as needed. (IIIB10, HP-I)
10. Inspect and repair charging system.
    a. Perform charging system output test; determine needed repairs.
    b. Examine and adjust alternator drive belts; replace as needed. (IIIB11, HP-I)
11. Check electrical system for excessive drain on battery and repair as necessary.
12. Clean up work area.
13. Return tools to proper location.
14. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Battery and charging system diagnosis and service are performed.

PROCESS

All performance elements for performing battery and charging system diagnosis and service are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM LIGHTING SYSTEM DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform lighting system diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with the complexity of the diagnosis and repair.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Diagnose and repair electrical lights and circuit components. (LA01, LA11, LA21, LA31, EL01, EL11, EL21)
   a. Check operation.
   b. Inspect and repair or replace wiring, sockets and connectors. (IIIB17, HP-I)
   c. Inspect and replace bulbs, flashers, switches, motors and relays if necessary. (IIIB17, HP-I)
   d. Inspect, replace and aim headlights if necessary. (IIIB14, HP-I)
   e. Inspect, repair or replace retractable headlight components. (IIIB15, HP-I)
8. Clean up work area.
9. Return tools to their proper location.
10. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Lighting system diagnosis and repair are performed.

PROCESS

All performance elements for lighting system diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM HORN AND WIPER/WASHER DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform horn and wiper/washer diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Test and diagnose horn electrical system; perform repair or replacement. (IIIB18, HP-G; EL01, EL11, EL21)

8. Inspect windshield wiper/washer system; perform repair or replacement. (IIIB19, HP-I; EL01, EL11, EL21)
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Horn and wiper/washer diagnosis and repair are performed.

PROCESS

All performance elements for performing horn and wiper/washer diagnosis and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform accessories diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with the complexity of the repair.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Diagnose and repair electrical accessory concerns. (EL01, EL11, EL21)
   a. Check operation of power window systems; perform necessary action. (IIIB20, HP-I)
   b. Remove and replace power seat systems, including motors, linkages and cables; check operation. (IIIB21, HP-G)
   c. Remove and replace components of electric lock systems; check operation. (IIIB22, HP-G; IIIB23, HP-G)
   d. Remove and replace components of electrical sunroof and convertible top systems; check operation. (IIIB24, HP-G)
   e. Remove and replace components of power antenna systems; check operation. (IIIB26, HP-I)
   f. Remove and replace other OEM electrical accessory systems; check operation.
8. Clean up work area.
9. Return tools to their proper location.
10. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Accessories diagnosis and repair is performed.

PROCESS

All performance elements for performing accessories diagnosis and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM BRAKE HYDRAULIC SYSTEM DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform brake hydraulic system diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2 where applicable.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
3. Check technical service bulletins/updates and identify approved service procedure. (Some models may require proprietary equipment or a higher skill set.) (BR11, BR51)
4. Prepare the vehicle for diagnosis and service.
5. Secure appropriate tools, equipment and components required to complete the procedure.
6. Check operation of master cylinder, wheel cylinder and calipers; service as required.

7. Inspect brake lines and repair as required.
   a. Examine brake lines, flexible hoses and fittings for leaks, dents, kinks, rust, cracks, bulging or wear. (IIIC1, HP-G)
   b. Remove and install brake lines; replace hoses, fittings and supports as needed. (IIIC2, HP-G)
8. Select, handle, store and install brake fluids; dispose of per EPA regulations. (IIIC3, HP-G)
9. Bleed/flush hydraulic system.
   a. Bleed (manual, pressure, vacuum or surge) brake system. (IIIC4, HP-G)
   b. Flush hydraulic system; observe automobile manufacturer's procedures.
10. Pressure test hydraulic system. (IIIC5, HP-G)
11. Clean up work area.
12. Return tools to their proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Brake hydraulic system diagnosis and repair are performed.

PROCESS

All performance elements for performing brake hydraulic system diagnosis and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM DRUM AND DISC BRAKE DIAGNOSIS, REPLACEMENT AND ADJUSTMENT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform drum and disc brake diagnosis, replacement and adjustment.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (BR11, BR51)
5. Test drive and then prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Remove wheels; determine necessary action.
   a. Remove and reinstall caliper(s) and rotor(s), brake drum(s) and wheel bearings. (IIIC6, HP-I; IIIC8, HP-I)
   b. Adjust brake shoes/caliper(s). (IIIC6, HP-I)
   c. Clean and inspect caliper mountings and slides for damage and wear. (IIIC9, HP-I)
   d. Check parking brake system operation; repair and adjust if necessary. (IIIC10, HP-I)
8. Reinstall wheels and torque lug nuts. (IIIC7, HP-I)
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Drum and disc brake diagnosis, replacement and adjustment are performed.

PROCESS

All performance elements for performing drum and disc brake diagnosis, replacement and adjustment are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM ANTILOCK BRAKE SYSTEM (ABS) SERVICE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform antilock brake system service.

PERFORMANCE CRITERIA

Skill is completed without error using knowledge of structural design, automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (BR11, BR51)
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Perform ABS service.
   a. Identify and replace ABS wheel speed sensor components. (IIIC11, HP-G)
   b. Depressurize high pressure hydraulic system. (IIIC12, HP-G)
   c. Pressure test hydraulic system. (IIIC5, HP-G)
8. Clean up work area.
9. Return tools to their proper location.
10. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Antilock brake system service is performed.

PROCESS

All performance elements for performing antilock brake system service are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM AIR CONDITIONING SERVICE AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform air conditioning service and repair.

PERFORMANCE CRITERIA

Skill is completed without error using automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (AC01)
5. Prepare the vehicle for diagnosis and service.
6. Check system functionality and general operation if possible.
7. Secure appropriate tools, equipment and components required to complete the procedure.

8. Maintain and verify correct operation of refrigerant-handling equipment. (IIID2, HP-G)
9. Inspect A/C system for external oil leaks and damage.
10. Test for leaks in the A/C system; determine necessary action.
11. Discharge system using approved recovery procedure.
12. Recycle and process used refrigerant.
    a. Identify and recover refrigerant from A/C system. (IIID4, HP-G)
    b. Test refrigerant for noncondensable gases. (IIID7, HP-G)
    c. Recycle refrigerant. (IIID5, HP-G)
    d. Label and store refrigerant. (IIID6, HP-G)
13. Remove and replace A/C compressor and mountings. (IIID12, HP-G)
14. Inspect A/C compressor drive belts; replace and adjust as needed. (IIID11, HP-G)
15. Inspect, repair or replace A/C system mufflers, hoses, lines, fittings and seals. (IIID13, HP-G)
16. Inspect evaporator and housing water drain; perform necessary action.
17. Inspect condenser for proper airflow; repair or replace as necessary. (IIID15, HP-G)
18. Inspect and replace receiver/drier or accumulator/drier. (IIID16, HP-G)
19. Inspect and repair A/C component wiring. (IIID17, HP-G)
20. Evacuate and charge A/C system.
    a. Evacuate system; check for leaks. (IIID8, HP-G)
    b. Add proper type and quantity of oil. (IIID10, HP-G)
    c. Charge system with refrigerant; check for leaks. (IIID9, HP-G)
    d. Install required Environmental Protection Agency labels.
21. Clean up work area.
22. Return tools to proper location.
23. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

Technician is required to have appropriate refrigerant certification.

PRODUCT

Air conditioning service and repair are performed.

PROCESS

All performance elements for air conditioning service and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM HEATING, VENTILATION AND A/C COMMON COMPONENT INSPECTION AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform heating, ventilation and A/C common component inspection and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (AC01)
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Inspect, test and repair or replace A/C-heater ducts, doors, hoses and outlets. **Note: Use special caution to check for glass and other foreign material.**
8. Inspect, test, and repair or replace A/C-heater vacuum components.
9. Inspect and repair or replace A/C evaporator heater housing. (Higher skill set may be required. See Skill 25.)
10. Inspect cooling system. (Higher skill set may be required. See Skill 27.)
11. Clean up work area.
12. Return tools to proper location.
13. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations

PRODUCT

Heating, ventilation and A/C common component inspection and repair are performed.

PROCESS

All performance elements for performing heating, ventilation and A/C common component inspection and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM INSPECTION AND REPAIR OF ENGINE COOLING SYSTEMS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform inspection and repair of engine cooling systems.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Perform pressure test if possible.

8. Inspect, test and replace cooling system components.
   a. Examine and replace engine cooling and heater system hoses and belts. (IIIE1, HP-G)
   b. Examine, remove and replace radiator, pressure cap, recovery system and water pump. (IIIE2, HP-G; CO01, CO11)
   c. Identify type of coolant.
   d. Remove and replace thermostat and housing.
   e. Drain and recover coolant; refill and bleed air; check level of protection. (IIIE3, HP-I)
   f. Remove and replace fan (electrical and mechanical), pulley, clutch and shroud. (IIIE4, HP-G; CO21, CO22)
   g. Examine, remove and replace oil coolers. (IIIE5, HP-G)
   h. Check operation of electric fan sensors; replace as necessary. (IIIE6, HP-G)
   i. Perform pressure test if repairs have been performed.
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Engine cooling systems inspection and repair are performed.

PROCESS

All performance elements for performing inspection and repair of engine cooling systems are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM DRIVE TRAIN INSPECTION AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform drive train inspection and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service; test drive if possible.
6. Secure appropriate tools, equipment and components required to complete the procedure.
7. Remove and replace engine when required; inspect and replace mounts and mounting area. (DT01, DT11)

8. Remove and replace transmission/transaxle.
   a. Inspect and replace mounts and mounting area. (IIIF4, HP-G)
   b. Remove, replace and adjust shift or clutch linkage. (IIIF1, HP-G)
   c. Remove and replace cables and linkages; adjust throttle valve, kickdown and accelerator pedal. (IIIF2, HP-G)
9. Remove and replace electronic sensors, wiring and connectors. (IIIF3, HP-G)
10. Remove and replace drive assemblies.
    a. Remove and replace rear drive axle. (IIIF5, HP-G)
    b. Remove and replace front drive axle. (IIIF5, HP-G)
    c. Remove, inspect and replace front half shafts and constant velocity joints; measure and/or adjust half shaft angle. (IIIF6, HP-G; DT21)
11. Inspect, remove and replace drive shafts and universal joints; determine necessary action. (IIIF7, HP-G; DT31)
12. Test drive vehicle.
13. Clean up work area.
14. Return tools to proper location.
15. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Drive train inspection and repair are performed.

PROCESS

All performance elements for performing drive train inspection and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM FUEL AND EXHAUST INSPECTION, REMOVAL AND INSTALLATION.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform fuel and exhaust inspection, removal and installation.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Repair fuel systems.
   a. Remove and inspect fuel tank, fuel gauge, fuel pump, filter, cap, filler hose and lines; replace as needed. (IIIG2, HP-G; FU01, FU02, FU11)
   b. Inspect and replace inertia switch. (IIIG2, HP-G)
   c. Inspect fuel for contamination. (IIIG2, HP-G)
8. Remove, inspect and replace evaporative emission systems. (IIIG4, HP-G; EM01, EM11)
9. Remove, inspect and replace air injection system components.
10. Repair exhaust components. (EX01)
    a. Remove, inspect and replace exhaust manifolds, pipes, mufflers, converters, resonators and heat shields. (IIIG1, HP-G)
    b. Remove, inspect and replace inlet air temp controls. (IIIG3, HP-G)
11. Verify systems operation.
12. Clean up work area.
13. Return tools to proper location.
14. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Fuel and exhaust inspection, removal and installation are performed.

PROCESS

All performance elements for performing fuel and exhaust inspection, removal and installation are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being serviced and the type of service being performed.

PERFORM ACTIVE AND PASSIVE RESTRAINT DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform active and passive restraint systems diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with the model of vehicle.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (RE01, RE11, RE31, RE41)
   SPECIAL NOTE: USE MODEL SPECIFIC MANUFACTURER'S INFORMATION.
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Inspect ALL seat belts, shoulder harnesses, mounts and mounting area; remove and replace or repair using manufacturer's recommendations. (IIIH[1]1, HP-G; IIIH[1]2, HP-G; IIIH[2]1, HP-I; IIIH[2]2, HP-G)
8. Diagnose ALL motorized seat belt assemblies and retractor assemblies; remove and replace in accordance with automobile manufacturer's recommendations. (IIIH[2]2, HP-G)
9. Inspect ALL knee bolsters; replace as necessary. (IIIH[2]2, HP-G)
10. Clean up work area.
11. Return tools to proper location.
12. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-Car UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Active and passive restraint systems are diagnosed and repaired.

PROCESS

All performance elements for performing active and passive restraint systems diagnosis and repair are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type of vehicle being serviced and the type of service being performed.

PERFORM SUPPLEMENTAL RESTRAINT SYSTEMS (SRS) DIAGNOSIS AND REPAIR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform supplemental restraint systems diagnosis and repair.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check technical service bulletins/updates and identify approved service procedure. (RE21, RE22)
5. Prepare the vehicle for diagnosis and service.
6. Secure appropriate tools, equipment and components required to complete the procedure.

7. Inspect and replace supplemental restraint system.
   a. Disarm SRS; use automobile manufacturer's procedures. (IIIH[3]1, HP-I)
      SPECIAL NOTE: USE AUTOMOBILE MANUFACTURER'S PUBLISHED PROCEDURES.
   b. Examine and replace sensors and wiring. (IIIH[3]2, HP-G)
   c. Examine and replace deployed SRS modules; dispose of module and clean up SRS module residue using manufacturer's recommendations. (IIIH[3]3, HP-G)
   d. Examine, remove and replace nondeployed SRS modules; use appropriate procedures to deploy module. (IIIH[3]5, HP-G)
8. Diagnose and repair SRS.
   a. Test SRS using diagnostic equipment; retrieve fault codes and test circuit integrity. (IIIH[3]6, HP-G)
   b. Verify that SRS is armed and operational. (IIIH[3]4, HP-I)
9. Clean up work area.
10. Return tools to proper location.
11. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Supplemental restraint systems diagnosis and repair are performed.

PROCESS

All performance elements for performing supplemental restraint systems diagnosis and repair are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type of vehicle being serviced and the type of service being performed.

PERFORM IDENTIFICATION AND REPAIR OF PLASTICS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform identification and repair of plastics.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies depending on necessary operations.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Determine repairability of damaged plastic component. (IV1, HP-I)
5. Check automobile manufacturer's recommended procedures and I-CAR UPCR. (PR01, PR11)
6. Develop and document a repair plan.
7. Secure appropriate tools, equipment and components required to complete the procedure.
8. Identify the type of plastic. (IV2, HP-I)
9. Select the appropriate type of repair method (adhesives or welding).

10. Perform adhesive repairs. (IV4, HP-I)
    a. Select the type of adhesive within product line best suited for the repair based on the type of damage and plastic composition.
    b. Prepare the plastic surface for repair. (This task is critical.) The procedure varies depending on the type of plastic (e.g., thermoplastic, thermosetting) being repaired and the type of damage (e.g., cuts, tears, punctures). The task will include cleaning the part and beveling the repair area. (IV2, HP-I)
    c. Mix the adhesives, if necessary, and apply. Use reinforcements and/or backing material as necessary. (IV5, HP-I)
11. Perform plastic welding repairs. (IV3, HP-I)
    a. Select the type of welder to be used (hot air, airless, or ultrasonic).
    b. Prepare the plastic surface for repair. (This task is critical.) The procedure varies depending on the type of plastic (e.g., thermoplastic, thermosetting) being repaired and the type of damage (e.g., cuts, tears, punctures). The task will include cleaning the part and beveling the repair area. (IV2, HP-I)
    c. Use reinforcements, backing material and/or two-sided weld.
    d. Select the welding rod best suited for the type of plastic being repaired.
    e. Apply the weld.
12. Remove excess adhesives or weld material.
13. Apply filler as necessary; filler must be intended for use on plastic repairs.
14. Retexture plastics to restore original texture. (IV6, HP-G)
15. Clean up work area.
16. Return tools to proper location.
17. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Identification and repair of plastics are performed.

PROCESS

All performance elements for performing identification and repair of plastics are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend upon the extent of damage and the type of vehicle being serviced.

PERFORM SHEET MOLDED COMPOUND REPAIRS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform sheet molded compound repairs.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies with extent of damage.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check automobile manufacturer's recommended procedures and I-CAR UPCR. (AB01)
5. Remove interior and exterior trim to determine the extent of the damage
6. Develop and document a repair plan.
7. Secure appropriate tools, equipment and components required to complete the procedure.
8. Remove other moldings, trim and hardware that may interfere with the repair. (TH01)

PERFORM BONDED SHEET MOLDED COMPOUND PANEL REPLACEMENT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform bonded sheet molded compound panel replacement

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Check automobile manufacturer and I-CAR UPCR. (AB01)
5. Remove interior trim panels to locate mill and pads, bracing, electrical components and mechanical components.
6. Remove the damaged area to create a window. (IV7, HP-I).
7. Develop and document a repair plan for full panel replacement or sectioning.
8. Determine appropriate material within product line.

9. Remove the remaining necessary panel or section area from space frame.
10. Repair space frame and reinforcement supports as necessary; restore corrosion protection. (IV8, HP-G)
11. Prepare the existing panel and the new panel section by trimming to fit and beveling edges of existing panels and the new panel.
12. Apply adhesive around the panel as well as corresponding braces. Align panels and bond backing strips.
13. Fill and finish as necessary. (IV9, HP-I)
14. Replace trim and molding (after refinish process).
15. Clean up work area.
16. Return tools to proper location.
17. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Bonded sheet molded compound panels are replaced.

PROCESS

All performance elements for performing bonded sheet molded compound panel replacement are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle being repaired and nature of the damage.

PREPARE SURFACE FOR REFINISHING.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Proper eye protection
- Personal safety practices concerning:
  - Clothing
  - Breathing equipment
  - Hand and air tool usage
  - Handling chemicals
  - Ventilation
- Basic tools, equipment and shop space
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Perform surface for refinishing.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides which encompass both preparation and refinishing.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Wash the entire vehicle. (VB2, HP-I)
5. Inspect, remove and store exterior trim and molding on repaired, replaced and blended panels; clean up any remaining residue. (Higher skill set may be required. See Skill 6.) (VB2, HP-I)
6. Determine the composition and condition of the substrate and topcoat; plan refinish system within product line. (RF01P, RF01S, RF11, RF21; VB3, HP-I)

7. Prepare surface of new replacement part (not on vehicle).
   a. Clean all surfaces to be refinished.
   b. Treat raw surfaces and prime according to paint manufacturer's specifications.
   c. Prepare factory primed or newly primed surface by applying appropriate product (e.g., electroplate primers, flexible primers, self etching primers, epoxy primers, sealers, adhesion promoters) according to paint manufacturer's specifications.
8. Prepare surface of repaired part and/or welded replacement part (on vehicle).
   a. Clean all surfaces to be refinished.
   b. Featheredge broken areas to be finished.
   c. Prepare exterior, interior and closed section surfaces including masking for epoxy and primer.
   d. Treat raw exterior surfaces and prime according to paint manufacturer's specifications.
   e. Apply primer surfacer if necessary.
   f. Block sand fully cured primer surfacer; reprime and caulk where necessary.
   g. Finish sand necessary area; prep undamaged paint for blend area.
9. Strip finish from damaged panel (e.g., checked, acid rain) when necessary. (Panel may need to be removed from vehicle.)
   a. Remove paint finish (mechanically or chemically).
   b. Treat raw surface to be refinished per paint manufacturer's specifications.
   c. Apply primer and primer surfacer per paint manufacturer's specifications.
   d. Finish sand surface and prepare for refinishing.
10. Mask remaining trim and protect areas that will not be refinished. (VB8, HP-I)
11. Apply necessary caulking, sealers or coatings. (VB17, HP-I; VB19, HP-I; VB20, HP-I)
12. Prepare adjacent panels for blending (e.g., using chemical and/or mechanical adhesion procedures) per paint manufacturer's specifications. (VB21, HP-I)
13. Clean up work area.
14. Return tools to proper location.
15. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Paint manufacturer's procedures must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Surface is prepared for refinishing.

PROCESS

All performance elements for preparing surface for refinishing are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle, size of the area to be refinished and material manufacturer's recommendations.

PERFORM PREPARATION OF EQUIPMENT AND REFINISH MATERIALS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform preparation of equipment, paint area and refinish materials.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides which encompass both preparation and refinishing.

PERFORMANCE ELEMENTS

1. Wear safety glasses.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Inspect the condition of the air supply, mixing station and paint booth. (VC1, HP-I)
5. Identify paint type and color using manufacturer's vehicle information label; select closest variation (e.g., computer variations based on manufacturer, color decks, color mapping) per paint manufacturer. (VD1, HP-I)
6. Use paint manufacturer's recommendations to prepare paint.
   a. Identify and mix paint using a formula. (VD13, HP-G)
   b. Shake, stir, reduce, catalyze and strain paint. (VD2, HP-I)

7. Check and adjust spray gun operation. (VC2, HP-I)
8. Apply selected product on test or let-down panel, then clear coat; check for color match. (VD4, HP-I)
9. Tint the color to achieve a blendable match. (VD15, HP-G)
10. Complete appropriate documentation. (Skill 37 must be completed immediately after Skill 36.)

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Preparation of equipment, paint area and refinish materials is performed.

PROCESS

All performance elements for preparing surface for refinishing are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type of vehicle, size of the area to be refinished, and material manufacturer's recommendations.

PERFORM APPLICATION OF THE FINISH.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform application of finish.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Apply the necessary finish materials using appropriate techniques. (See Skill 36.) (RF41; VD3, HP-I)
   a. Single stage topcoats for refinishing. (VD5, HP-I)
   b. Basecoat/clearcoat for panel blending or overall refinishing. (VD6, HP-I; VD7, HP-G)
   c. Tri-coat for zone and panel blending or overall refinishing. (VD12, HP-G)

5. Clean up spray equipment.
6. Return equipment to the proper location.
7. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile and paint manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Application of finish is performed.

PROCESS

All performance elements for performing application of finish are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed will depend on the type of vehicle, size of the area to be refinished and material manufacturer's recommendations.

PERFORM APPLICATION OF SPECIALIZED PAINT SCHEMES AND PRODUCTS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform application of specialized paint schemes and products.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile, paint and product manufacturers' procedures and specifications and industry standards.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Apply the necessary finish materials using appropriate techniques.
   Note: Preparation of surface is a critical part of these procedures.
   a. Painted stripes. (Layout and masking are included in the application of stripes.)
   b. Finish, using shading, blackout and other techniques.
   c. Specialized coatings (e.g., bed liners, chip guard, etc.).
   d. Low and medium gloss finish.

5. Clean up spray equipment.
6. Return equipment to the proper location.
7. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile and paint manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Application of specialized paint schemes and products is performed.

PROCESS

All performance elements for performing application of specialized paint schemes and products are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

The actual tasks performed depend on the type of vehicle, size of the area to be refinished and material manufacturer's recommendations.

IDENTIFY AND SOLVE PAINT PROBLEMS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Identify and solve paint problems.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile and paint manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Identify and repair the following paint problems caused by materials under the paint: (RF81)
   a. Problems developed from inferior body work
   b. Problems developed from incorrect application of substrate material (VD1, HP-G; VD4, HP-G; VD5, HP-G; VD16, HP-G; VD17, HP-G; VD25, HP-G; VD26, HP-G)

5. Identify and repair the following paint problems caused by application error:
   a. Spray equipment problems
   b. Spray technique problems (VD2, HP-G; VD3, HP-G; VD7, HP-G; VD8, HP-G; VD10, HP-G)
6. Identify and repair the following paint problems not related to body repairs:
   a. Problems caused by the environment (VE18, HP-G; VE20, HP-G; VE21, HP-G; VE22, HP-G)
   b. Problems caused by foreign materials on the paint (VE19, HP-I)
7. Clean up work area and equipment.
8. Return tools and supplies to the proper location.
9. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile and paint manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Paint problems are identified and solved.

PROCESS

All performance elements for identifying and solving paint problems are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the extent of the defects as well as the type of refinishing materials used.

PERFORM BUFFING AND POLISHING OF FINISH.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform buffing and polishing of finish.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile, paint and product manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Inspect and repair imperfections in the finish per paint, product and automobile manufacturers' specifications. (VF2, HP-I)
   a. Address and repair imperfections (e.g., runs, dirt nibs, fish eyes, die backs, texture, shrink, swelling, etc.).
   b. Sand and polish area with appropriate compounds.
   c. Glaze as needed.
   d. Clean area.

5. Perform final wash, removing all residue (e.g., compound, overspray, etc.) from repair process.
6. Evaluate finish.
7. Clean and return equipment to the proper location.
8. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile, paint and product manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Buffing and polishing of finish are performed

PROCESS

All performance elements for buffing and polishing the finish are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the extent of polishing needed.

PERFORM REMOVAL AND APPLICATION OF DECALS, TAPE STRIPES, EMBLEMS AND MOLDINGS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform removal and application of decals, tape stripes, emblems and moldings.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Skill is completed within model specific, published, flat rate time guides multiplied by 2.

PERFORMANCE ELEMENTS

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with state, local, and federal regulations.
4. Check automobile manufacturer's recommended procedures.
5. Remove old decals or stripes.
   a. Use chemicals to loosen adhesive.
   b. Use a heat gun to loosen adhesive.
   c. Use mechanical removal tool to remove adhesive.

6. Install new decals or stripes. (VF1, HP-G)
   a. Clean surface of paint.
   b. Align decals or stripes and adhere to surface.
7. Remove moldings or emblems held in place by fasteners or adhesives.
   a. Use chemicals to loosen adhesive.
   b. Use heat gun to loosen adhesive.
   c. Use mechanical removal tool to remove adhesive.
8. Service, clean and/or retape moldings or emblems for reattachment if it is determined to reuse them.
9. Install moldings or emblems.
   a. Clean painted surface.
   b. Position molding or emblem.
   c. Adhere to surface with fasteners or adhesive.
10. Clean up work area.
11. Return tools and supplies to proper location.
12. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Removal and application of decals, tape stripes, emblems and moldings is performed.

PROCESS

All performance elements for performing removal and application of decals, tape stripes, emblems and moldings are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the type and size of decals, stripes, emblems and moldings being used.

PERFORM POST REPAIR INTERIOR AND EXTERIOR CLEANUP.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform post repair interior and exterior cleanup.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Automobile interior/exterior is free of all dirt, debris, glass and repair residue caused by the collision/repair process.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

Note: These elements pertain to post repair cleanup only and do not reflect general detailing.

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Review work/repair order and inspect repair area.
5. Prepare the vehicle to be cleaned.

6. Secure the appropriate tools, equipment and supplies required to complete the procedure.
7. Perform interior cleanup (include trunk, rubber stripping, and door jambs). (VF3, HP-I)
8. Perform exterior cleanup removing all foreign materials from surface. (VF3, HP-I)
9. Inspect repair per repair facility's specifications.
10. Clean up work area.
11. Return tools and supplies to proper location.
12. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Post repair interior and exterior cleanup is performed.

PROCESS

All performance elements for performing post repair interior and exterior cleanup are critical and must be performed in sequence.

It may not be necessary to perform all ASE tasks. The actual tasks performed depend on the condition of the vehicle being serviced

CREATE COMPUTERIZED DAMAGE REPORT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Published parts and labor data
- Keyboarding skills
- Computer/printer/manuals
- Appropriate software/manuals
- Automobile manufacturer's technical information
- Automotive Service Excellence (ASE) Tasks List
- I-CAR Uniform Procedures for Collision Repair (UPCR)
- Appropriate documentation
- Facility policy and procedures
- Environmental safety standards
- Local, state and federal regulations

WORK TO BE PERFORMED

Create computerized damage report.

PERFORMANCE CRITERIA

Skill is completed without error using information technology tools, automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Utilize collision estimating guides, electronic data bases, damage report terminology and facility's policy and procedures.
2. Record all customer and vehicle identification information pertaining to the damaged vehicle.
3. Obtain sketches, photos or videos of the vehicle.
4. List parts needed to make repair.
5. Obtain cost of parts and labor from published and/or electronic information providers.
6. Calculate the total cost of parts, labor and sales tax.
7. Complete appropriate documentation.
8. Communicate information to all appropriate parties.
9. Store records.

PERFORMANCE ASSESSMENT CRITERIA

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Computerized damage report is created.

PROCESS

All performance elements for creating computerized damage report are critical and must be performed in sequence.

IDENTIFY DAMAGE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Proper eye protection
Personal safety practices concerning:
- Clothing
- Breathing equipment
- Hand and air tool usage
- Handling chemicals
- Ventilation

Basic tools, equipment and shop space
Automobile manufacturer's technical information
Automotive Service Excellence (ASE) Tasks List
I-CAR Uniform Procedures for Collision Repair (UPCR)
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Identify damage.

PERFORMANCE CRITERIA

Skill is completed without error using the automobile manufacturer's procedures and specifications and industry standards.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

Note: It is absolutely necessary that there is an understanding of vehicle construction and primary versus secondary damage. It may be necessary to consult with technician who can perform Skill 2.

1. Wear proper eye protection.
2. Comply with personal safety practices concerning clothing, breathing equipment, hand and air tool usage, handling chemicals and ventilation.
3. Comply with environmental safety standards concerning handling, storage and disposal of hazardous materials and chemicals in accordance with local, state and federal regulations.
4. Assure that vehicle is cleaned for inspection of visible damage.
5. Utilize vehicle constr[illegible]primary and secondary damage and dimension manuals.
6. Obtain documents [illegible]ecord analysis.

7. Identify and record the vehicle identification number, year, make, model, engine, etc.
8. Identify and record precollision damage.
9. Identify and record primary and secondary damage.
   a. Obtain necessary tools and equipment to raise vehicle.
   b. Obtain damaged vehicle dimensions.
   c. Compare vehicle dimensions; record results.
   d. Perform necessary action to access hidden damage; record findings.
10. Identify and record damaged engine, transmission and suspension components.
11. Identify and record passenger component damage.
12. Identify exterior trim and finish damage; record findings.
13. Clean up work area.
14. Return tools and equipment to proper location.

PERFORMANCE ASSESSMENT CRITERIA

Automobile manufacturer's procedures and specifications must be followed.

All procedures are completed in accordance with ASE standards and I-CAR UPCR.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Damage is identified.

PROCESS

All performance elements for identifying damage are critical and must be performed in sequence.

PERFORM COMPUTER ESTIMATING RELATED TASKS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Computer/printer/manuals
Appropriate software/manuals
Digital camera
Internet access
Fax machine
Computerized damage report
Appropriate documentation
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Perform computer estimating related tasks.

PERFORMANCE CRITERIA

Skill is completed without error using the facility and specific insurance company procedures and standards.

Time required to complete this skill varies depending upon the necessity of the elements being performed.

PERFORMANCE ELEMENTS

1. Power up the computer and log on as necessary.
2. Load computer programs and access computer files.
3. Print documents and maintain hardcopy files.
4. Interface digital imaging.
   a. Take pictures.
   b. Download pictures into damage reports.
5. Interface with necessary contacts using the internet.
   a. Access the internet.
   b. Access the necessary address.
   c. Download computer files and store electronically according to policy.
   d. Upload files and/or photos electronically.
6. Send documents via a fax modem.
7. Complete appropriate documentation.

PERFORMANCE ASSESSMENT CRITERIA

Facility and related company procedures must be followed.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Computer estimating related tasks are performed.

PROCESS

All performance elements for performing computer estimating related tasks are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

HANDLE CLAIMS PROCESS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Computer/printer/manuals
Appropriate software/manuals
Telephone
Internet access
Fax machine
Computerized damage report
Appropriate documentation
Customer information
Insurance policy information
Facility policy and procedures
Environmental safety standards
Local, state and federal regulations

WORK TO BE PERFORMED

Handle claims process.

PERFORMANCE CRITERIA

Skill is completed without error using the facility and specific insurance company procedures and standards.

Time required to complete this skill varies.

PERFORMANCE ELEMENTS

Note: Estimator must have a general understanding of the claims and repair process.

1. Communicate with insurance company and vehicle owner.
   a. Explain aspects of insurance (e.g., deductible, total loss, betterment, depreciation, adjustments, diminished value and prior damage).
   b Explain available options.
2. Review damage report and damage estimate.
3. Obtain authorizations to perform repair.
4. Proceed per store policy to schedule repair work and order parts.
5. Continue communication with insurance company and vehicle owner until repair is completed.
6. Inspect completed repairs.
7. Prepare final bill documents and arrange for payment.
8. Resell customer upon completion of repairs.

PERFORMANCE ASSESSMENT CRITERIA

Facility and related company procedures must be followed.

Specific insurance company procedures must be followed.

Individuals are encouraged to participate in the voluntary ASE and I-CAR training and qualification tests.

Environmental safety concerns are strictly adhered to in accordance with local, state and federal regulations.

PRODUCT

Claims process is properly handled.

PROCESS

All performance elements for handling claims process are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

The following matrix lists the location of the Automotive Service Excellence (ASE) tasks and the I-CAR Uniform Procedures for Collision Repair (UPCR) within the Collision Repair Technician Cluster Illinois Occupational Skill Standards. The intent of the matrix is to assist in the development of an ASE certified program for educational facilities by providing a quick reference sheet that cross-references the ASE tasks with the Collision Repair Technician Cluster Illinois Occupational Skill Standards.

Automotive Service Excellence Tasks, I-CAR Uniform Procedures for Collision Repair and Collision Repair Technician Cluster Illinois Occupational Skill Standards Cross Reference

Skill 1	**Perform Welding and Cutting** ID1, HP-I; IIE1, HP-I; ID11, HP-I; IIE11, HP-I; ID3, HP-I; IIE3, HP-I; IIE15, HP-G; ID9, HP-G; IIE9, HP-G; ID10, HP-G; IIE10, HP-G; ID12, HP-I; ID13, HP-I; ID14, HP-I; IIE12, HP-I; IIE13, HP-I; IIE14, HP-I; ID16, HP-I; ID17, HP-I; IIE17, HP-I; IIE18, HP-I; ID18, HP-G; IIE19, HP-G WE01A, WE01S, WE11A, WE11S, WE21A, WE21S, WE51S
Skill 2	**Perform Damage Analysis** IIA2, HP-I; IIA3, HP-G; IIA4, HP-I; IIA5, HP-G; IB1, HP-G; IB2, HP-I; IB4, HP-G; IB5, HP-G; IB6, HP-I; IB6, HP-I; IIB1, HP-I; IIA1, HP-G ME01
Skill 3	**Perform Frame Inspection and Repair** IA11, HP-I; IA1, HP-I; IA2, HP-I; IA3, HP-G; IA4, HP-G; IA5, HP-G; IA6, HP-G; IA7, HP-G; IA8, HP-G; IA9, HP-G ME01, ST01A, ST01S, ST11, SP11A, SP11S, CP01A, CP01S
Skill 4	**Perform Unibody Inspection, Measurement and Repair** IB1, HP-G; IB2, HP-I; IB6, HP-I; IB7, HP-I; IB14, HP-G; IB15, HP-G; IB13, HP-G; IB18, HP-G; IB16, HP-I; IB19, HP-G ME01, ST01A, ST01S, ST11, CP01A, CP01S
Skill 5	**Perform Removal and Installation of Fixed Glass** IC1, HP-G; IC2, HP-G SG01, SG02, SG11, SG21
Skill 6	**Perform Removal of Interior and Exterior Trim, Molding, Upholstery and Other Miscellaneous Accessory Items and Hardware** IIA3, HP-G; IIA2, HP-G
Skill 7	**Perform Mechanically Attached Panel Removal, Replacement and Alignment** IIB11, HP-I; IIB1, HP-I; IIB2, HP-I RC01P, RC01S, RC11P, RC11S, RC21P, RC21S, HO01, HO11, HO21A, HO21P, HO21S, FR01A, FR01S, FR21P, CP01A, CP01S, TH01

Skill 8	**Perform Fixed Panel Replacement** IIB1, HP-I; IIA6, HP-I; IIA8, HP-I; IIB12, HP-I; IIE11, HP-I; IIB11, HP-I; IIB15, HP-I QT01A, QT01P, QT01S, QT11A, QT11S, RB01A, RB01S, RO01S, RO02S, RO11, SP71A, SP71S, SP91A, SP91S, ST21A, ST21S, CP01A, CP01S, ST31
Skill 9	**Perform Panel Repair** IIB1, HP-I; IIC1, HP-I; IIC3, HP-I; IIC4, HP-G; IIC5, HP-G; IIC7, HP-I; IIC8, HP-I ST21A, ST21S, ST31
Skill 10	**Perform Miscellaneous Nonstructural Repair** IIB13, HP-G; IIB15, HP-G; IIB17, HP-G DO31A, DO31S, DO31P
Skill 11	**Perform Moveable Glass Inspection and Repair** IID1, HP-G; IID3, HP-G; IID4, HP-G MG01, MG21, MG31, MG51
Skill 12	**Perform Front Suspension Diagnosis and Repair** IIIA14, HP-G; IIIA16, HP-G; IIIA17, HP-G; IIIA18, HP-G; IIIA19, HP-G; IIIA20, HP-G; IIIA18, HP-G; IIIA21, HP-G; IIIA26, HP-G; IIIA27, HP-G SU11, DT21, DT31, SU01, SU51
Skill 13	**Perform Rear Suspension Diagnosis and Repair** IIIA22, HP-G; IIIA23, HP-G; IIIA25, HP-G; IIIA26, HP-G; IIIA27, HP-G SU31, SU41, SU01, SU51 IIID1-9, P-1; IIID1-11, P-2
Skill 14	**Perform Steering System Diagnosis and Repair** IIIA30, HP-G; IIIA32, HP-G; IIIA33, HP-G; IIIA31, HP-G; IIIA6, HP-G, IIIA7, HP-G; IIIA2, HP-G; IIIA3, HP-G; IIIA4, HP-G; IIIA5, HP-G; IIIA9, HP-G; IIIA10, HP-G; IIIA11, HP-G; IIIA13, HP-G; IIIA12, HP-G; IIIA27, HP-G SR21, SR01, SR11, SR41, SR51
Skill 15	**Perform Wheel Alignment Diagnosis, Adjustment and Repair** IIIA36, HP-G; IIIA28, HP-I; IIIA37, HP-I; IIIA38, HP-I; IIIA45, HP-I; IIIA41, HP-I; IIIA29, HP-G; IIIA37, HP-I; IIIA38, HP-I; IIIA43, HP-I; IIIA44, HP-I; IIIA46, HP-I; IIIA42, HP-I; IIIA41, HP-I WA11, WA01
Skill 16	**Perform Wheel and Tire Diagnosis and Repair** IIIA47, HP-I; IIIA48, HP-I; IIIA49, HP-G; IIIA50, HP-I; IIIA51, HP-G; IIIA52, HP-I WH01S

Skill 17	**Perform General Electrical System Diagnosis and Repair** IIIB1, HP-I; IIIB2, HP-I; IIIB3, HP-I; IIIB4, HP-I EL01, EL11, EL21
Skill 18	**Perform Battery and Charging System Diagnosis and Service** IIIB5, HP-I; IIIB9, HP-G; IIIB6, HP-I; IIIB8, HP-I; IIIB10, HP-I; IIIB11, HP-I
Skill 19	**Perform Lighting System Diagnosis and Repair** IIIB17, HP-I; IIIB14, HP-I; IIIB15, HP-I LA01, LA11, LA21, LA31, EL01, EL11, EL21
Skill 20	**Perform Horn and Wiper/Washer Diagnosis and Repair** IIIB18, HP-G; IIIB19, HP-I EL01, EL11, EL21
Skill 21	**Perform Accessories Diagnosis and Repair** IIIB20, HP-I; IIIB21, HP-G; IIIB22, HP-G; IIIB23, HP-G, IIIB24, HP-G, IIIB26, HP-I EL01, EL11, EL21
Skill 22	**Perform Brake Hydraulic System Diagnosis and Repair** IIIC1, HP-G; IIIC2, HP-G; IIIC3, HP-G; IIIC4, HP-G; IIIC5, HP-G BR11, BR51
Skill 23	**Perform Drum and Disc Brake Diagnosis, Replacement and Adjustment** IIIC6, HP-I; IIIC8, HP-I; IIIC9, HP-I; IIIC10, HP-I; IIIC7, HP-I BR11, BR51
Skill 24	**Perform Antilock Brake System (ABS) Service** IIIC11, HP-G; IIIC12, HP-G; IIIC5, HP-G BR11, BR51
Skill 25	**Perform Air Conditioning Service and Repair** IIID2, HP-G; IIID4, HP-G; IIID7, HP-G; IIID5, HP-G; IIID6, HP-G, IIID12, HP-G; IIID11, HP-G; IIID13, HP-G; IIID15, HP-G, IIID16, HP-G; IIID17, HP-G; IIID8, HP-G; IIID10, HP-G; IIID9, HP-G AC01
Skill 26	**Perform Heating, Ventilation and A/C Common Component Inspection and Repair** AC01
Skill 27	**Perform Inspection and Repair of Engine Cooling Systems** IIIE1, HP-G; IIIE2, HP-G; IIIE3, HP-I; IIIE4, HP-G, IIIE5, HP-G; IIIE6, HP-G CO01, CO11, CO21, CO22

Skill 28	**Perform Drive Train Inspection and Repair** IIIF4, HP-G; IIIF1, HP-G; IIIF2, HP-G; IIIF3, HP-G; IIIF5, HP-G; IIIF6, HP-G; IIIF7, HP-G DT01, DT11, DT21, DT31
Skill 29	**Perform Fuel and Exhaust Inspection, Removal and Installation** IIIG2, HP-G; IIIG4, HP-G; IIIG1, HP-G; IIIG3, HP-G; FU01, FU02, FU11, EM01, EM11, EX01
Skill 30	**Perform Active and Passive Restraint Systems Diagnosis and Repair** IIIH[1]1, HP-G; IIIH[1]2, HP-G; IIIH[2]1, HP-I; IIIH[2]2, HP-G RE01, RE11, RE31, RE41
Skill 31	**Perform Supplemental Restraint Systems (SRS) Diagnosis and Repair** IIIH[3]1, HP-I; IIIH[3]2, HP-G; IIIH[3]3, HP-G; IIIH[3]5, HP-G; IIIH[3]6, HP-G; IIIH[3]4, HP-I RE21, RE22
Skill 32	**Perform Identification and Repair of Plastics** IV1, HP-I; IV2, HP-I; IV4, HP-I; IV5, HP-I; IV3, HP-I; IV6, HP-G PR01, PR11
Skill 33	**Perform Sheet Molded Compound Repairs** IV7, HP-I; IV8, HP-G AB01, TH01
Skill 34	**Perform Bonded Sheet Molded Compound Panel Replacement** IV7, HP-I; IV8, HP-G; IV9, HP-I AB01
Skill 35	**Prepare Surface for Refinishing** VB2, HP-I; VB3, HP-I; VB8, HP-I; VB17, HP-I; VB19, HP-I; VB20, HP-I; VB21, HP-I RF01P, RF01S, RF11, RF21
Skill 36	**Perform Preparation of Equipment and Refinish Materials** VC1, HP-I; VD1, HP-I; VD13, HP-G; VD2, HP-I; VC2, HP-I; VD4, HP-I; VD15, HP-G
Skill 37	**Perform Application of Finish** VD3, HP-I; VD5, HP-I; VD6, HP-I; VD7, HP-G; VD12, HP-G RF41
Skill 38	**Perform Application of Specialized Paint Schemes and Products**

Skill 39	**Identify and Solve Paint Problems** VD1, HP-G; VD4, HP-G; VD5, HP-G; VD16, HP-G; VD17, HP-G; VD25, HP-G; VD26, HP-G; VD2, HP-G; VD3, HP-G; VD7, HP-G; VD8, HP-G; VD10, HP-G; VE18, HP-G; VE20, HP-G; VE21, HP-G; VE22, HP-G; VE19, HP-I RF81
Skill 40	**Perform Buffing and Polishing of Finish** VF2, HP-I
Skill 41	**Perform Removal and Application of Decals, Tape Stripes, Emblems and Moldings** VF1, HP-G
Skill 42	**Perform Post Repair Interior and Exterior Cleanup** VF3, HP-I
Skill 43	**Create Computerized Damage Report**
Skill 44	**Identify Damage**
Skill 45	**Perform Computer Estimating Related Tasks**
Skill 46	**Handle Claims Process**

Analyze Repair Procedures	The process of using the information from the measurements obtained as well as the information from a visual inspection to formulate a repair plan in which the structural integrity will be restored to the vehicle.
Betterment Factor	Term used in the insurance industry when a part such as a tire is replaced, the insurance company pays for the unworn part and the customer pays for the amount that was worn.
Blistering	Bubbling up of the paint film in the form of small blisters.
Blushing	White or grayish cast that sometimes forms on a lacquer film as it dries, particularly under conditions of hot, humid weather.
Chalking	Formation of soft white powder on the surface of a finish which may be removed by friction of the finger or similar methods.
Checking	Small, irregular cracks going partly or completely through a paint film. Like "alligatoring," only very fine cracks. Compare Cracking and Crazing.
Chemical Staining	Spotty staining or discoloration of the paint topcoat caused by atmospheric conditions (acid rain, tree sap, etc.).
Chipping	Condition of the finish flaking off or chipping away from the surface underneath.
Cracking	Crevices or ruptures going completely through a film. This is in contrast to "alligatoring" or Checking where crevices slowly work their way down from the surface.
Cratering	Surface blemishes in a freshly painted surface, usually in the form of small round patches also called fisheyes, usually due to contamination.
Crazing	Very fine minute cracks on the surface that are usually interlaced.
Deductible	A dollar amount, specified in most insurance policies, beyond which insurance protection begins. The insured assumes the loss up to the limit of the deductible amount, then the insurance company pays any amount over the deductible, up to the policy limit.

Diminished Value*	The amount by which resale value of a damaged/repaired vehicle has been reduced for having sustained significant damage.
Direct Secondary Damage	A condition to a firewall, floor pan or other similar component in which the component is pushed back due to an impact to a frame rail or apron. The damage is a result of the impact to another component that was directly hit in the collision. This type of damage generally occurs to parts that are welded or joined to the parts receiving the primary impact of a collision.
Flaking	Condition when the finish does not knit properly to the undercoating causing the finish to chip off the work by breaking into small pieces.
Flat Rate	Not time but work units as in bid time.
Flat Rate Pay	An amount of money per hour produced.
Indirect Damage	Any damage that occurs as a result of direct damage.
Indirect Secondary Inertial Damage	The damage to the opposite end of a vehicle from which the primary damage occurred. It is caused by the inertia forces present during a collision. An example of this type of damage is if the rear end of a car is out of dimensional tolerance as the result of a front end impact. This type of damage has often been referred to as Kick Up or Kick Down. It can also be used to describe the cause of damage to mechanical components such as motor mounts or front suspension as the result of a rear end collision.
Inter-Industry Conference on Auto Collision Repair (I-CAR)	An international, nonprofit training organization that provides technical training programs in all areas of the collision industry. They are dedicated to improving the quality, safety and efficiency of auto collision repair for the benefit of the consumer.
National Institute for Automotive Service Excellence (ASE)	An independent, nonprofit organization which provides testing and certification for repair technicians as well as promoting education for consumers, the media and others to aid in the decision making when seeking automotive repairs.
National Automotive Technicians Education Foundation (NATEF)	An independent, nonprofit organization that evaluates technician training programs against standards developed by the automotive industry and recommended qualifying programs for certification by ASE.

Restore Corrosion Protection	The process of preparing and applying corrosion resistant materials in accordance with I-CAR Uniform Procedures for Collision Repair (UPCR).
Supplement	A supplement is created if a change or addition must be made to an estimate where a final print has been produced.
Uniform Procedures for Collision Repair (UPCR)	Outlines industry accepted, uniform repair procedures for technicians, insurers, suppliers, vehicle makers, educators and others. They enable the collision repair industry to produce uniform, quality repairs for the consumer.

Sources: *Collision Industry Conference Glossary of Terms, January 1997, General Automotive Terms (currently under revision).*

**I-CAN, The Consumer Advocate Network*

APPENDIX A — GLOSSARY OF TERMS

Academic Skills	Skills (and related knowledge) contained in the subject areas and disciplines addressed in most national and state educational standards, including English, mathematics, science, etc.
Assessment	A process of measuring performance against a set of standards through examinations, practical tests, performance observations and/or the completion of work portfolios.
Content Standard	A specification of what someone should know or be able to do to successfully perform a work activity or demonstrate a skill.
Critical Work Functions	Distinct and economically meaningful sets of work activities critical to a work process or business unit which are performed to achieve a given work objective with work outputs that have definable performance criteria. A critical work function has three major components: • **Conditions of Performance:** The information, tools, equipment and other resources provided to a person for a work performance. • **Work to Be Performed:** A description of the work to be performed. • **Performance Criteria:** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedure requirements (e.g., safety, standard professional procedures) and time and resource requirements. The IOSSCC requires that these performance criteria be further specified by more detailed individual performance elements and assessment criteria.
Credentialing	The provision of a certificate or award to an individual indicating the attainment of a designated set of knowledge and skills and/or the demonstration of a set of critical work functions for an industry/occupational area.
Illinois Occupational Skill Standards and Credentialing Council (IOSSCC)	Legislated body representing business and industry which establishes skill standards criteria, endorses final products approved by the industry subcouncil and standards development committee and assists in marketing and dissemination of occupational skill standards.
Industry	Type of economic activity, or product or service produced or provided in a physical location (employer establishment). They are usually defined in terms of the Standard Industrial Classification (SIC) system.

Industry Subcouncil	Representatives from business/industry and education responsible for identifying and prioritizing occupations for which occupational performance skill standards are adapted, adopted or developed. They establish standards development committees and submit developed skill standards to the IOSSCC for endorsement. They design marketing plans and promote endorsed skill standards across the industry.
Knowledge	Understanding the facts, principles, processes, methods and techniques related to a particular subject area, occupation or industry.
Occupation	A group or cluster of jobs, sharing a common set of work functions and tasks, work products/services and/or worker characteristics. Occupations are generally defined in terms of a national classification system including the Standard Occupational Classification (SOC), Occupational Employment Statistics (OES) and the Dictionary of Occupational Titles (DOT).
Occupational Cluster	Grouping of occupations from one or more industries that share common skill requirements.
Occupational Skill Standards	Specifications of content and performance standards for critical work functions or activities and the underlying academic, workplace and occupational knowledge and skills needed for an occupation or an industry/occupational area.
Occupational Skills	Technical skills (and related knowledge) required to perform the work functions and activities within an occupation.
Performance Standard	A specification of the criteria used to judge the successful performance of a work activity or the demonstration of a skill.
Product Developer	Individual contracted to work with the standard development committee, state liaison, industry subcouncil and IOSSCC for the adaptation, adoption or development of skill standards content.
Reliability	The degree of precision or error in an assessment system so repeated measurements yield consistent results.
Skill	A combination of perceptual, motor, manual, intellectual and social abilities used to perform a work activity.
Skill Standard	Statement that specifies the knowledge and competencies required to perform successfully in the workplace.

Standards Development Committee	Incumbent workers, supervisors and human resource persons within the industry who perform the skills for which standards are being developed. Secondary and postsecondary educators are also represented on the committee. They identify and verify occupational skill standards and assessment mechanisms and recommend products to the industry subcouncil for approval.
State Liaison	Individual responsible for communicating information among all parties (e.g., IOSSCC, subcouncil, standard development committee, product developer, project director, etc.) in skill standard development.
Third-Party Assessment	An assessment system in which an industry-designated organization (other than the training provider) administers and controls the assessment process to ensure objectivity and consistency. The training provider could be directly involved in the assessment process under the direction and control of a third-party organization.
Validity	The degree of correspondence between performance in the assessment system and job performance.
Workplace Skills	The generic skills essential to seeking, obtaining, keeping and advancing in any job. These skills are related to the performance of critical work functions across a wide variety of industries and occupations including problem solving, leadership, teamwork, etc.

Margaret Blackshere	AFL-CIO
Skip Douglas	Lucent Technologies
Judith Hale	Hale Associates
Terry Hoyland	Caterpillar University Caterpillar, Inc.
Michael O'Neill	Chicago Building Trades Council
Janet Payne	United Samaritans Medical Center
Gene Rupnik	Hospitality Industry
Jim Schultz	Illinois Retail Merchants Association Walgreen Company

Sam Anderson	Vice President American Postal Workers' Union
Colleen Bueche	Human Resources Supervisor Enterprise Rent-A-Car
John Burner	Assistant State Director United Transportation Union
Elwood Flowers	Lobbyist Amalgamated Transit
Carl Gallman	Administrative Assistant International Association of Machinists.
Karl Gnadt	Assistant to the Managing Director Champaign/Urbana Mass Transit District
Donald Good	Manager, Transportation Network U.S. Postal Service, Chicago Central P&DC
Wayne Grieder	President Archer Kostner Automotive
Thomas Nicely	Logistic Specialist JKC Trucking Company
Bruce Peterson	Mail Transport Equipment Coordinator U.S. Postal Service, Chicago Central P&DC
David Regner	Illinois School Transportation Association
Roger Roberson	CEO PFT/Roberson Corporation
Dianna Rushing	Association of Flight Attendant's Council
Carolyn Schoeneman	Manager Ground Employment ORDEX- United Airlines
Andy Sievers	Vice-President of Safety and Organizational Development PFT/Roberson Corporation
Joseph Szabo	State Director United Transportation Union

Paul Tatman	President Tatman Auto Body, Inc.
Russ Verona	President East Rockford Collision Center-North
Michael Wagner	General Manager Alpha Special Services
Vince Waters	Illinois Chapter of the American Concrete Pavement Association
Russ Wittkop	Special Representative, Midwest Territory International Association of Machinists
Gerald Zero	Secretary/Treasurer Illinois AFL-CIO Teamsters' Union
Ron Engstrom	State Liaison Illinois State Board of Education

APPENDIX D

COLLISION REPAIR TECHNICIAN CLUSTER STANDARDS DEVELOPMENT COMMITTEE

Jerry Basnar	Bob Carter's Auto Body Downers Grove, IL
Robert Behrens	Libertyville Auto Body Libertyville, IL
Wade Ebert	American Auto Body Springfield, IL
Nick Gojmeric	Collision Plus Swansea, IL
Pat Mallaney	Mallaney's CARSTAR Manteno, IL
Bill Mitchell	Conlon-Collins Ford Jeep Eagle Crystal Lake, IL
Joe Moore	Cahokia High School Cahokia, IL
Ron Ray	I-CAR Education Foundation Rolling Meadows, IL
Rick Shultz	A to Z Body & Fender Villa Park, IL
Kim Shirley	Kim's Auto Body & Paint Springfield, IL
Dick Taylor	Dick Taylor Automotive Services, Inc. Springfield, IL
Brad Zara	Zara's Collision Center Springfield, IL
Shannon Perkins	Product Developer Automotive Instructor Rend Lake College
Ron Engstrom	State Liaison Illinois State Board of Education

A. Developing an Employment Plan	1. Match interests to employment area. 2. Match aptitudes to employment area. 3. Identify short-term work goals. 4. Match attitudes to job area. 5. Match personality type to job area. 6. Match physical capabilities to job area. 7. Identify career information from counseling sources. 8. Demonstrate a drug-free status.
B. Seeking and Applying for Employment Opportunities	1. Locate employment opportunities. 2. Identify job requirements. 3. Locate resources for finding employment. 4. Prepare a resume. 5. Prepare for job interview. 6. Identify conditions for employment. 7. Evaluate job opportunities. 8. Identify steps in applying for a job. 9. Write job application letter. 10. Write interview follow-up letter. 11. Complete job application form. 12. Identify attire for job interview.
C. Accepting Employment	1. Apply for social security number. 2. Complete state and federal tax forms. 3. Accept or reject employment offer. 4. Complete employee's Withholding Allowance Certificate Form W-4.
D. Communicating on the Job	1. Communicate orally with others. 2. Use telephone etiquette. 3. Interpret the use of body language. 4. Prepare written communication. 5. Follow written directions. 6. Ask questions about tasks.
E. Interpreting the Economics of Work	1. Identify the role of business in the economic system. 2. Describe responsibilities of employee. 3. Describe responsibilities of employer or management. 4. Investigate opportunities and options for business ownership. 5. Assess entrepreneurship skills.
F. Maintaining Professionalism	1. Participate in employment orientation. 2. Assess business image, products and/or services. 3. Identify positive behavior. 4. Identify company dress and appearance standards. 5. Participate in meetings in a positive and constructive manner. 6. Identify work-related terminology. 7. Identify how to treat people with respect.

G. Adapting to and Coping with Change	1. Identify elements of job transition. 2. Formulate a transition plan. 3. Identify implementation procedures for a transition plan. 4. Evaluate the transition plan. 5. Exhibit ability to handle stress. 6. Recognize need to change or quit a job. 7. Write a letter of resignation.
H. Solving Problems and Critical Thinking	1. Identify the problem. 2. Clarify purposes and goals. 3. Identify solutions to a problem and their impact. 4. Employ reasoning skills. 5. Evaluate options. 6. Set priorities. 7. Select and implement a solution to a problem. 8. Evaluate results of implemented option. 9. Organize workloads. 10. Assess employer and employee responsibility in solving a problem.
I. Maintaining a Safe and Healthy Work Environment	1. Identify safety and health rules/procedures. 2. Demonstrate the knowledge of equipment in the workplace. 3. Identify conservation and environmental practices and policies. 4. Act during emergencies. 5. Maintain work area. 6. Identify hazardous substances in the workplace.
J. Demonstrating Work Ethics and Behavior	1. Identify established rules, regulations and policies. 2. Practice cost effectiveness. 3. Practice time management. 4. Assume responsibility for decisions and actions. 5. Exhibit pride. 6. Display initiative. 7. Display assertiveness. 8. Demonstrate a willingness to learn. 9. Identify the value of maintaining regular attendance. 10. Apply ethical reasoning.
K. Demonstrating Technological Literacy	1. Demonstrate basic keyboarding skills. 2. Demonstrate basic knowledge of computing. 3. Recognize impact of technological changes on tasks and people.
L. Maintaining Interpersonal Relationships	1. Value individual diversity. 2. Respond to praise or criticism. 3. Provide constructive praise or criticism. 4. Channel and control emotional reactions. 5. Resolve conflicts. 6. Display a positive attitude. 7. Identify and react to sexual intimidation/harassment.

M. Demonstrating Teamwork	1. Identify style of leadership used in teamwork. 2. Match team member skills and group activity. 3. Work with team members. 4. Complete a team task. 5. Evaluate outcomes.

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